

REPORT DOCUMENTATION PAGE				<i>Form Approved</i> OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 14-06-2013		2. REPORT TYPE Master's Thesis		3. DATES COVERED (From - To) 23-07-2012 to 14-06-2013	
4. TITLE AND SUBTITLE The Myth of Jointness in Department of Defense Requirements and Major Acquisition Programs				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) LTC Woodard B. Hopkins, III, USA				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Joint Forces Staff College Joint Advanced Warfighting School 7800 Hampton Blvd Norfolk, VA 23511-1702				8. PERFORMING ORGANIZATION REPORT	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release, distribution is unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT <p>The intent of the Goldwater-Nichols Act was not joint programs solely for efficiency, but to ensure interoperability among the joint force. Joint acquisition programs and interoperability are not synonymous, but all programs must be able to integrate into the current and future joint force. The Services are responsible for equipping their force in the manner they chose to accomplish their portion of the joint force. While there are sufficient authorities for the Joint Staff and the Secretary of Defense to influence requirements, procurement, and major acquisition programs, it appears that the optimum time is not met when making decisions on an acquisition program and its potential for jointness. Often, Services are directed to partner into a joint program. Rather than forcing the Services into joint acquisition programs for the sake of calling it joint, the Joint Staff and the Office of the Secretary of Defense would be better served allowing the Services to develop the capabilities they require, then if appropriate, leave it up to the Services to procure a program from a sister Service.</p> <p>Through a review of four multi-service programs and an analysis of two joint acquisition programs case studies, this paper will demonstrate that major joint acquisition programs do not deliver the requirements, save taxpayer dollars, nor deliver the capability to the joint force on time. The four multi-service programs were developed by a Service to meet their requirements; therefore the originating Service is fully vested into the program. The first two of these a second Service was lead to the program as a recommended solution to their requirement by the Department of Defense. In the latter two multi-service programs were solely developed and procured by a single Service before another service saw the potential of buying this material solution to their requirements as opposed to spending time and money developing a new program from anew.</p> <p>An in depth look at two joint programs, directed to go "joint" by the Secretary of Defense demonstrates that forcing the Services to do things together when it is outside what they require does not work. The first of these two case studies was doomed from the start when one Service was directed to yield there requirements to another. The second case study reviews a directed joint program that was on track only to be derailed by a long inter-service rivalry concerning roles and mission, ironically the same roles and mission debate that initiated the program to begin with.</p> <p>Based on the evidence provided, this paper argues and makes the recommendation that single service programs, later adopted by one or more services, 1) are the better path towards real savings and effectiveness of the joint force, 2) need not slow down the development process, and 3) will get the required capabilities into the hands of the Soldier, Sailor, Airman or Marine quicker. The Joint Force is best served when the Services pursue major acquisition programs specifically to address their Service requirements.</p>					
15. SUBJECT TERMS: Joint Requirements, Acquisition, Joint Requirements Oversight Council, Department of Defense					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Unclassified Unlimited	18. NUMBER OF PAGES 81	19a. NAME OF RESPONSIBLE PERSON
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER (include area code) 757-443-6301

NATIONAL DEFENSE UNIVERSITY

JOINT FORCES STAFF COLLEGE

JOINT ADVANCED WARFIGHTING SCHOOL



**THE MYTH OF JOINTNESS IN DEPARTMENT OF DEFENSE
REQUIREMENTS AND MAJOR ACQUISITION PROGRAMS**

by

Woodard B. Hopkins, III

Lieutenant Colonel, United States Army

**THE MYTH OF JOINTNESS IN DEPARTMENT OF DEFENSE
REQUIREMENTS AND MAJOR ACQUISITION PROGRAMS**

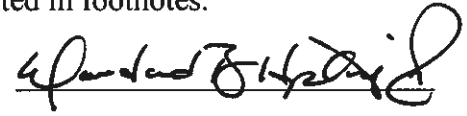
by

Woodard B. Hopkins, III

Lieutenant Colonel, United States Army

A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

This paper is entirely my own work except as documented in footnotes.

Signature: 

14 June 2013

Thesis Adviser:

Signature: 

Steven M. Guiliani, CAPT, USN

Approved by:

Signature: 

**Keith D. Dickson, Ph. D.
Committee Member**

Signature: 

**Charles J. Cunningham, Jr., DPA
Committee Member**

Signature: 

**James B. Miller, Col, USMC, Director
Joint Advanced Warfighting School**

ABSTRACT

The intent of the Goldwater-Nichols Act was not joint programs solely for efficiency, but to ensure interoperability among the joint force. Joint acquisition programs and interoperability are not synonymous, but all programs must be able to integrate into the current and future joint force. The Services are responsible for equipping their force in the manner they chose to accomplish their portion of the joint force. While there are sufficient authorities for the Joint Staff and the Secretary of Defense to influence requirements, procurement, and major acquisition programs, it appears that the optimum time is not met when making decisions on an acquisition program and its potential for jointness. Often, Services are directed to partner into a joint program. Rather than forcing the Services into joint acquisition programs for the sake of calling it joint, the Joint Staff and the Office of the Secretary of Defense would be better served allowing the Services to develop the capabilities they require, then if appropriate, leave it up to the Services to procure a program from a sister Service.

Through a review of four multi-service programs and an analysis of two joint acquisition programs case studies, this paper will demonstrate that major joint acquisition programs do not deliver the requirements, save taxpayer dollars, nor deliver the capability to the joint force on time. The four multi-service programs were developed by a Service to meet their requirements; therefore the originating Service is fully vested into the program. The first two of these a second Service was lead to the program as a recommended solution to their requirement by the Department of Defense. In the latter two multi-service programs were solely developed and procured by a single Service before another service saw the potential of buying this material solution to their

requirements as opposed to spending time and money developing a new program from anew.

An in depth look at two joint programs, directed to go “joint” by the Secretary of Defense demonstrates that forcing the Services to do things together when it is outside what they require does not work. The first of these two case studies was doomed from the start when one Service was directed to yield there requirements to another. The second case study reviews a directed joint program that was on track only to be derailed by a long inter-service rivalry concerning roles and mission, ironically the same roles and mission debate that initiated the program to begin with.

Based on the evidence provided, this paper argues and makes the recommendation that single service programs, later adopted by one or more services, 1) are the better path towards real savings and effectiveness of the joint force, 2) need not slow down the development process, and 3) will get the required capabilities into the hands of the Soldier, Sailor, Airman or Marine quicker. The Joint Force is best served when the Services pursue major acquisition programs specifically to address their Service requirements.

TABLE OF CONTENTS

Introduction.....	1
CHAPTER 1: EARLY JOINT REQUIREMENTS DEVELOPMENT	6
The National Security Act of 1947	6
The Hoover Commission, 1947-1949	8
The Rockefeller Committee, 1953	9
CHAPTER 2: EARLY SERVICE PROGRAMS THAT BECAME JOINT.....	12
The F-4 Phantom II	12
The A-7 Corsair II.....	14
The M-1 Abrams Main Battle Tank.....	17
The UH-60 Helicopter.....	19
CHAPTER 3: CASE STUDY 1: THE TACTICAL FIGHTER, EXPERIMENTAL	24
United States Navy Requirements.....	24
United States Air Force Requirements.....	27
Change of Administration	29
CHAPTER 4: THE RECENT PAST IN ACQUISITION REFORM.....	38
CHAPTER 5: CASE STUDY 2: THE JOINT CARGO AIRCRAFT	43
The Army Future Cargo Aircraft Program.....	59
The Air Force Light Cargo Aircraft Program	60
The Joint Cargo Aircraft Program.....	64
Homeland Defense (HA/DR) Hurricane Sandy Assistance and Relief	66
CHAPTER 6: CASE STUDY ANALYSIS.....	68
CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS	71
BIBLIOGRAPHY	75

INTRODUCTION

Over the past decade, while the United States has been in what is described as an era of persistent conflict, acquisition of major systems in the Department of Defense has been under a barrage of negative comments from the news industry, members of Congress, and some parts of the defense infrastructure. Twenty-five years ago, these same groups exposed the \$1,000 hammer and the \$600 toilet seat. Photographs of then Representative Barbara Boxer displaying a poster board drawing of a \$7,000 coffee maker for the Air Force C-5 Galaxy transport plane were the rallying cry for defense acquisition reform. While these all rang true to the American public, there was only a fraction of truth to the rhetoric. In fact the coffee pot in question, portrayed as one found in most households, was not a coffee pot at all. It was a large machine designed to prepare large volumes of hot food and beverages for the crew and passengers while the C-5 was in flight. Further, it was specifically designed to withstand total loss of cabin pressure and 40 g's of acceleration.¹ Commercial airliners used similar machines for their larger planes and paid approximately \$3,000 for one at the time.² The large difference in cost between the two was the result of both the need to purchase much smaller quantities for the smaller number of Defense Department aircraft, and the redesign of these commercial machines that the Department needed to fit into the available space in these aircraft without compromising mission requirements.

¹ Fred Hiatt, "Change Brewing," *The Washington Post*, October 6, 1984.

² Kenneth L. Adelman and Norman R. Augustine, *The Defense Revolution: Strategy for the Brave New World*, (San Francisco: Institute for Contemporary Studies Press, 1990), 133.

This specific example of the coffee pot scored the desired political points at the time; however, defense acquisition programs are under different scrutiny today. The present condition of the U.S. economy, coupled with the mandated cuts over the next ten years due to the Budget Control Act and the federal deficit, will surely keep the defense budget in the public spotlight.

Following World War II, the United States established the Department of Defense in part to synchronize the requirements and capabilities of the services. This included the establishment of various groups, committees and boards to define capabilities and to determine requirements. The intent was to balance capabilities across services to avoid duplication and redundancy. As the Department began to consolidate more power in the late 1940s and throughout the 1950s, defense officials believed additional cost savings along with greater efficiencies could be realized through joint service representation in the requirement development phase. Several studies, commissions, and committees have attempted to determine how the Defense Department could gain efficiency.

Unfortunately, these attempts made at executing large joint acquisition programs rarely meet expectations. In fact, major acquisition programs that involve significant portions of the services' budgets are characterized by delays, cost overruns, and cancellation.

The passing of Goldwater-Nichols Act in 1986 required that the services approach operations from a more joint approach, ensuring that service capabilities supported the Combatant Commander while simultaneously complimenting each other. While Goldwater-Nichols has been largely successful in matching the capabilities of services, particularly in areas of conducting operations and Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR), the Act only steers

the joint force and the Defense Department in the direction of the joint acquisition of major combat systems and weapons by assessing the military requirements for programs. In fact, Goldwater-Nichols directs the Chairman of the Joint Chiefs of Staff to develop doctrine for joint employment and policies for joint training, while only telling the Chairman to consider the “unnecessary duplication of effort among the armed forces.”³ While this does not specifically prescript joint service programs, there have been many attempts with varying success over the years. To the untrained eye, these programs appear to be more costly, fail to meet production schedules, exceed cost estimates, or any combination of the three. Many of the joint programs since the Goldwater-Nichols Act have begun with the promise of achieving jointness, only to fail to meet the requirements of joint force, let alone that of the participating services.

The paper will begin with an overview of joint requirements development since World War II. This begins with a review of the National Security Act of 1947, continues with the efforts of the Hoover Commission and the Rockefeller Committee to streamline government operations with an emphasis on increasing efficiencies. A review of the 1985 President’s Blue Ribbon Commission on Defense Management, the Goldwater-Nichols Act of 1986, and current defense requirements processes will take place between the two case studies.

This paper will then examine four programs that began as single service programs that later had significant effects for other services. They were, designed, developed, resourced and procured by the Navy and Army, respectively, and later procured by one or

³ Goldwater-Nichols Department of Defense Reorganization Act of 1986, codified at *U.S. Code* 10 (1986), § 153.

more services. The first two address historical cases of the Navy's F-4 Phantom II and A-7 Corsair II aircraft. The second two programs reviewed are Army service programs of the M1 Abrams main battle tank and the UH-60 Black Hawk helicopter.

Following this examination of the four service programs, this paper evaluates examples of joint programs intended to meet the requirements of two or more services and therefore save funds. The two joint programs reviewed take place across a span of fifty years by looking a joint program with its origin in the late 1950s at the beginning of the modern joint acquisition period and a promising joint program cancelled a year ago.

The first case study is a review of the Tactical Fighter, Experimental (TFX) later designated the F-111 Aardvark advanced fighter-bomber. The development of the TFX began in the late 1950s and labeled by many as one of the first truly joint acquisition programs. The Navy and the Air Force, guided by the heavy hand of the Secretary of Defense, had to compromise their individual service requirements to reach an agreement on the joint requirements of the new aircraft. The results were borderline disastrous.

The second case study discusses the recent Joint Cargo Aircraft (JCA) program. This program, which began in 2004 as the Army's Future Cargo Aircraft (FCA), was a directed joint program, merging the JCA with Air Force's Light Cargo Aircraft program. With minimal friction, the Army and Air Force matched their requirements prior to selecting an aircraft and proceeding with source selection. Unlike the TFX, the JCA was on sure footing with both services coming to terms on the capabilities of the aircraft until the Secretary of Defense intervened.

Through the analysis of these two case studies, this paper demonstrates that major joint acquisition programs do not deliver the requirements the joint force requires, do not

save taxpayer dollars, and do not deliver the product to the joint force on time. The intent of Goldwater-Nichols was not joint programs for efficiency, but joint programs to ensure interoperability among the joint force. Joint acquisition programs and interoperability are not synonymous, but all programs must be able to integrate into the current and future joint force. Based on the evidence, this paper argues that single service programs, later adopted by one or more services, are the better path towards real savings and effectiveness of the joint force.

CHAPTER 1: EARLY JOINT REQUIREMENTS DEVELOPMENT

The end World War II served as the dawn of a new era in defense acquisition for the United States. Large standing forces became the new norm due to overseas commitments and the emergence of the Soviet Union as an adversary. With the many technological advances made during the war, such as jet powered aircraft, ballistic missiles, and the atomic bomb, investment in defense systems was significantly higher. Prior to the war the Army and Navy acted independently and were free to procure what each identified as its unique requirement.

The National Security Act of 1947

The National Security Act of 1947 established of the National Military Establishment (renamed the Department of Defense in 1949) to unify the different services of the military, established the Air Force, and re-affirmed civilian control of the armed forces through the creation of the position of the Secretary of Defense. The Department took steps to increase efficiencies and reduce redundant capabilities, specifically in the areas of the services missions and procurement of equipment to support service requirements. The structures outlined in the Act to manage these two Defense Department functions were the Munitions Board and the Research and Development Board.¹

The Munitions Board replaced the Joint Army and Navy Munitions Board, which had been responsible during the war for coordinating army and navy munitions

¹ *National Security Act of 1947*, Public Law 80-253, 80th Congress, 1st Session. (July 26, 1947), § 213.

procurement, stockpiling critical materials, making foreign purchases, and allocating machine tools. It was comprised of a chairman, appointed by the President, and “an Under Secretary or Assistant Secretary from each of the three military departments (at the time the Army, Navy, and Air Force), to be designated in each case by the Secretaries of their respective departments.”² Reporting to the Secretary of Defense, and in support of strategic plans prepared by the Joint Chiefs of Staff as directed, the Munitions Board was to:

- recommend assignment of procurement responsibilities among the several military services and to plan for standardization of specifications and for the greatest practicable allocation of purchase authority of technical equipment and common use items on the basis of single procurement.
- determine relative priorities of the various segments of the military procurement programs.
- make recommendations to regroup, combine, or dissolve existing interservice agencies operating in the fields of procurement, production, and distribution in such manner as to promote efficiency and economy.
- review material and personnel requirements presented by the Joint Chiefs of Staff and those presented by the production, procurement, and distribution agencies assigned to meet military needs, and to make recommendations thereon to the Secretary of Defense.³

The Research and Development Board, whose purpose was to “advise the Secretary of Defense as to the status of scientific research relative to the national security, and to assist him in assuring adequate provision for research and development on scientific problems relating to the national security,”⁴ and was chartered to:

- prepare a complete and integrated program of research and development for military purpose.

² National Security Act of 1947, § 213.

³ Ibid.

⁴ Ibid.

- recommend measures of coordination of research and development among the military departments, and allocation among them of responsibilities for specific programs of joint interest.⁵

This board too was comprised of a chairman, appointed by the President, but its membership was comprised of two representatives each from the Army, Navy, and Air Force designated by the Secretaries of their respective services.

The Hoover Commission, 1947-1949

Simultaneously with the creation of these boards, the Congress directed the Commission on Organization of the Executive Branch of the Government to “bring into an integrated organizational structure the numerous agencies left in the wake of the depression, the war, and demobilization.”⁶ This commission, led by former President Herbert Hoover and later referred to as the Hoover Commission, was comprised of a bipartisan membership, six republicans and six democrats, and had the active participation of President Harry S. Truman.⁷ The Commission’s review of the National Military Establishment reported that the services were divided by “interservice rivalries which indicated a lack of understanding, that military security depends upon cooperation and balance between the Army, Navy, and Air Force, and upon the creation of a genuinely unified military arm.”⁸ The report also characterized the position of Secretary of Defense as “weak and heavily qualified by the provisions of the act of 1947 which set

⁵ National Security Act of 1947, § 213.

⁶ Congressional Research Service, *Executive Branch Reorganization : An Overview. A study prepared for the Committee on Governmental Affairs, United States Senate, by the Congressional Research Service, March 1978*, (Washington, D.C.: U.S. Government Printing Office, March 1978), 18-19.

⁷ Ibid.

⁸ United States Commission on Organization of the Executive Branch of the Government (1947-1949) and Herbert Hoover, *The Hoover Commission Report on Organization of the Executive Branch of the Government*, (New York: McGraw-Hill, 1949), 187.

up a rigid structure of federation rather than unification.”⁹ Further, the report identified that the Secretary of Defense had only “general” authority over the military services and that his power over the budget of the entire National Military Establishment was inadequate. In this generally supervisory capacity, the Secretary could neither direct nor enforce the policies to act. The Commission further believed that the Secretary could not neither be held accountable as the position “lacks authority to carry out the mandates of the determined policy.”¹⁰

The Hoover Report’s recommendations were wide sweeping, recommending that the Secretary of Defense be fully empowered to direct the preparation and execution of the defense budget, as well as having the authority for the “procurement and management of supplies and material.”¹¹ This authority could be delegated to the Munitions Board “with directions to expedite by all possible means the elimination of costly duplication in procurement programs and waste in utilization among the three services.”¹²

The Rockefeller Committee, 1953

When President Dwight D. Eisenhower came into office, he too deemed the Department of Defense in need of another look. He established the President’s Advisory Committee on Government Organization in 1953, appointing Nelson A. Rockefeller as the committee’s Chairman. In his letter of transmittal to Secretary of Defense Charles E. Wilson, Chairman Rockefeller stated that the Committee “concentrated its attention on

⁹ Hoover Commission Report, 187-9.

¹⁰ Ibid., 189.

¹¹ Ibid., 194.

¹² Ibid.

the basic organization and procedures” within the Department of Defense, and in particular the “position of the Secretary of Defense and his relationships with his principal civilian and military officials.”¹³ The Committee found that the United States faced the challenge of “providing adequate national defense without wrecking the national economy,” it posited that the population would support a “Department of Defense which is capable of providing the Nation with maximum security at minimum cost, based on the fundamental principle of civilian control of the Military Establishment.”¹⁴

While the Rockefeller Committee found the National Security Act a major step forward, the Committee did make recommendations to improve the organization and procedures within the Department. One finding of the Committee was to abolish the Munitions Board and the Research and Development Board, which the Committee found “rigid and unwieldy.”¹⁵ In place of these boards, the Committee recommended the creation of three Assistant Secretaries of Defense: as Assistant Secretary for Research and Development, an Assistant Secretary for Supply and Logistics, and an Assistant Secretary for Applications Engineering, dividing the functions of the two boards among the three new positions. The committee predicted these positions would make the system more flexible, enable savings in personnel, point out potential areas of duplication, and save money. Additionally, the report recommended Service Secretaries reorganize their

¹³ United States Committee on Department of Defense Organization. *Report of the Rockefeller Committee on Department of Defense Organization*, (Washington, D.C.: United States Government Printing Office, 1953), v.

¹⁴ Ibid., 1.

¹⁵ Ibid., 11.

services organization in all these areas, including procurement.¹⁶ President Eisenhower adopted many of these recommendations with his Reorganization Plan No. 6 in 1953, including the dissolution of the standing boards and the creation of multiple Assistant Secretary positions.¹⁷

The recommendations of these three committees, in addition to Second Hoover Commission from 1953-1955, made strides at improving efficiencies in the Department of Defense, particularly in the areas of the purchasing of supplies and services. Where they were not so attentive was in the area of acquisition management, specifically of large expensive programs. In lieu of another commission, the appointment of Robert McNamara as Secretary of Defense serves as another attempt to address acquisition programs and the potential for major joint programs.

¹⁶ Ibid., 12.

¹⁷ Neil MacNeil and Harold W. Metz. *The Hoover Report, 1953-1955, What It Means to You As Citizen and Taxpayer*, (New York: Macmillan, 1956), 199.

CHAPTER 2: EARLY SERVICE PROGRAMS THAT BECAME JOINT

Some acquisition programs that are characterized by the common observer as successful joint programs were joint only by name and by happenstance. This list would include the items like the F-4 and A-7 aircraft, the M1 Abrams main battle tank and the UH-60 Black Hawk helicopter. Use by more than one service is what makes these four programs joint, but they were really service programs that for various reasons were later adopted by at least one more service.

The F-4 Phantom II

The F-4 Phantom II originated in October 1954, when the Navy gave the McDonnell Douglas Company a letter of intent for a new project to develop a twin-engine attack fighter aircraft.¹ Originally designated as the AH-1, its designation changed to the F4H-1 in 1955 when the Navy made specification changes to make the primary role of the aircraft a “long-range high-altitude interceptor.”² Competing against the Chance Vought F8U-3 Crusader III, the Navy selected the Phantom II as the new standard aircraft for Navy Squadrons in 1958. Following successful carrier trials in 1960, the F-4B interceptor plane emerged as the final production model for the Navy.³

¹ Michael J. H. Taylor, *Jane's World Combat Aircraft* (Surrey, UK: Jane's Information Group, 1988), 349.

² Gordon Swanborough and Peter M. Bowers, *United States Navy Aircraft Since 1911* (London, UK: Putnam, 1976), 301.

³ Ibid.

In the Air Force Tactical Air Command (TAC), pilots were concerned with their mission of supporting ground troops.⁴ After the Navy's successful trials and following his predecessor's initiative, Secretary of Defense Robert McNamara pushed the Air Force to adopt the Navy's Phantom II in lieu of continuing to produce the F-105 Thunderchief fighter-bomber.⁵ The TAC commander successfully convinced the Air Force Chief of Staff to re-program money in the 1962 budget to purchase 30 F-4s. McNamara encouraged and publicized this effort as it supported his overall effort to streamline the business priorities of the Department of Defense and increase commonality. To increase commonality between the two aircraft, the McNamara further insisted that the Air Force make only limited changes to their version of the Phantom II.⁶ The Air Force requirements differed from the Navy's in that they desired a multi-role aircraft, capable of conducting close air support, interdiction, and counter air.⁷ The major modification that the Air Force made to the airplane was altering the in-flight re-fueling system giving engineers the space to install full dual controls in the cockpit that would improve aircrew coordination and performance when conducting operations in the attack role.⁸ The U. S. Marine Corps also adopted the Phantom II, adding bomb racks for its use in a ground attack role.⁹

⁴ Glenn E. Bugos, "Manufacturing Certainty: Testing and Program Management for the F-4 Phantom II," *Social Studies of Science* 23, no. 2 (May 1993): 287.

⁵ Deborah Shapley, *Promise and Power: The Life and Times of Robert McNamara* (Boston: Little, Brown & Company, 1993), 203.

⁶ Bugos, 287.

⁷ Marcelle Size Knaack, *Post-World War II Fighters, 1945-1973* (Washington, D.C.: Office of Air Force History, U.S. Air Force, 1986), 265-6.

⁸ G. G. O'Rourke. *Famous Aircraft: the F-4 Phantom II* (New York: Arco Publishing Co., Inc., 1969), 37.

⁹ *Ibid.*, 38.

The different versions created by the differing requirements of the services created what some regard as the “best multi-functional aircraft in the world” which incorporated advanced “missiles, electronics and supersonic performance” in one aircraft reducing pilot workload.¹⁰ Great Britain also purchased the Phantom II for use by the Royal Navy for a similar role as that of the U.S. Navy. Other nations buying the airplane included West Germany, Iran, Japan, South Korea, Israel, Turkey, Spain and Egypt.¹¹

Even though this airframe was used by all those customers, it was not really a joint program. When the Air Force was persuaded to purchase the Phantom II, the Navy had already developed the plane thus freeing the program from the inevitable requirements synchronization that would surely have slowed its development and procurement.¹²

The A-7 Corsair II

The A-7 Corsair II also started as a Navy program, developed as a carrier-based, single seat, light attack fighter.¹³ The Navy required a subsonic aircraft with the capability to carry a larger payload of conventional weapons that could loiter for extended periods provide support to ground forces. This new plane would replace the Navy’s A-4E Skyhawk light attack bomber, which had been in service with the Navy

¹⁰ James Michael Roherty, *Decisions of Robert S. McNamara; A Study of the Role of the Secretary of Defense* (Coral Gables, FL: University of Miami Press, 1970), 146; O'Rourke. *Famous Aircraft: the F-4 Phantom II*, 3.

¹¹ Taylor, *Jane's World Combat Aircraft*, 349; Peter G. Cooksley and Bruce Robertson, *Air Warfare*, (London: Arms & Armour Press, 1997), 105.

¹² Shapley, 222, 449.

¹³ John Quick, *Dictionary of Weapons and Military Terms* (New York: McGraw-Hill, 1973), 118.

since 1954.¹⁴ The Navy also directed its acquisition personnel to develop an aircraft based on an existing design in order to keep costs to a minimum. Using the Navy F-8 Crusader fighter as the basis of their study, LTV Aerospace Corporation won the design competition and subsequently the contract to build the A-7 in March 1964. The primary requirement that drove this project for the Navy was the need for an aircraft to perform the close air support and battlefield air interdiction mission.¹⁵

Concurrently, the Air Force was also in the market for an aircraft to replace its aging F-100 Super Sabre fleet.¹⁶ Development of a specialized, supersonic, multi-role aircraft that could perform “tactical air superiority, interdiction, and close air support” was that path the Air Force wanted to pursue.¹⁷

Adding pressure to the negotiations between the Navy and the Air Force was the Army’s press for a close support aircraft in the early 1960s. Urged by McNamara, the Army’s interest in a close air support program forced the Air Force to re-look the issue and eventually cede to the pressure. McNamara told the Army in 1962 that it should “not be bound by traditional viewpoints and past policies in DOD roles and missions agreements.”¹⁸ This coincided with the Air Force’s own initiative to improve close air support based on experiences in Vietnam. Receiving input from the Tactical Air Committee, Secretary McNamara accepted their findings that a small, relatively

¹⁴ Taylor, 343; Quick, 402.

¹⁵ Taylor, 346-7.

¹⁶ John C. Fredriksen. *Warbirds: An Illustrated Guide to U.S. Military Aircraft, 1915-2000* (Santa Barbara, CA: ABC-CLIO, 1999), 310.

¹⁷ Richard G. Head, "The Sociology of Military Decision-Making: The A-7 Aircraft." *The Pacific Sociological Review* 16, no. 2, (April 1973): 214.

¹⁸ *Ibid.*, 224.

inexpensive aircraft was needed for close air support and directed that the Navy would administer the program.¹⁹ At the same time Secretary McNamara also approved the Tactical Fighter, Experimental program, or the TFX, assigning the Air Force as the program lead.

For nearly twenty years, LTV produced many versions of the A-7 Corsair II and it was considered a successful program. Outside the capabilities of the aircraft itself, the program was successful as it was already in development and had one service lead. Much like the F-4 though, the A-7 was not a true joint program. Pressured by McNamara through the threatened transfer of close air support from their mission, the Air Force relented and purchased the plane. Why had the Air Force strayed away from this role? Many factors converged, but Dr. Richard Hallion perhaps summed it up best in 1986, at the time serving as the Director of the Special Staff Office, Aeronautical Systems Division, Wright-Patterson Air Force Base:

...it was the failure of the Air Force to ensure that it maintained a fleet of combat aircraft appropriate to the service's needs in the 1960s that led to that adaptation of three types from the Navy: the F-4 Phantom II, the A-7 Corsair, and the A-1 Skyraider.²⁰

Rather than ceding a core tactical mission to another service that has a more stake and perhaps focus on the remaining two of tactical air superiority and interdiction, the Air Force chose to agree with McNamara and modify their version of the A-7 for its use.

¹⁹ Lawrence S., Kaplan, Ronald D. Landa, and Edward J. Drea, *History of the Office of the Secretary of Defense. Vol. 5, The McNamara Ascendancy, 1961-1965*, (Washington D.C.: Office of the Secretary of Defense, Historical office, 1997), 467.

²⁰ Richard P. Hallion. "Doctrine, Technology, and Air Warfare: A Late Twentieth - Century Perspective," *Airpower Journal* 1, no. 2 (Fall, 1986): 23.

The M-1 Abrams Main Battle Tank

The main battle tank of the Army was the M60 Patton, entering service in 1960. It was not a unique design, but an M48 Patton tank re-fitted with a 105mm main gun, a more efficient engine, and improved armor.²¹ As the Cold War emerged following World War II, the Soviet Union's superior tanks, both in quality and in number, posed a serious threat to the Army's armored forces. The Army was having a tough time keeping pace with Soviet tank development. By upgrading and only achieving minimal advantage over emerging Soviet designs, coupled with the evolution of antitank missiles, the Army was not really getting ahead.²² In an effort to keep pace with Soviet tank development, the first attempt to replace the M60 at a replacement was the Main Battle Tank 70 (MBT-70) program. Secretary of Defense Robert McNamara initiated the MBT-70 program after reaching an agreement to enter development of a tank jointly with the Federal Republic of Germany.

The MBT-70 was designed to fight these seemingly advanced Soviet tanks in a major battle in central Europe and was built around the Shillelagh gun and missile launcher, combining a 152mm conventional main gun with an antitank guided missile launcher. Additionally, the tank was equipped with a 7.62mm coaxial machine gun and a 20mm cannon.²³ After spending millions of dollars and roughly ten years in development, Congress directed the cancellation of the MBT-70 program in 1971 but

²¹ Stephen Bull, *Encyclopedia of Military Technology and Innovation* (Westport, CT: Greenwood Press, 2004), 161; Christopher F. Foss, *Jane's Armour and Artillery* (London, UK: Jane's, 1994), 131.

²² Robert S. Cameron, "Pushing the Envelope of Battlefield Superiority: American Tank Development from the 1970s to the Present," *Armor* 107, no. 6 (1998), 8.

²³ Robert S. Cameron, "American Tank Development during the Cold War," *Armor* 107, no. 4 (1998), 34-5.

kept monies allocated towards a new tank design.²⁴ In his final report after four years as serving as the MTB-70 Program Manager, Brigadier General Bernard R. Luczak concluded that the major reason for the high cost of the program was “the time and money involved in running the joint program.”²⁵ After cancellation though, many of the technological developments and components would be of value in another tank venture, the XM1.

Throughout the development of the MBT-70 the M60A1 went through a series of upgrades. The first upgrades were major, including a new Reliability Improved Selected Equipment (RISE) engine, improved electrical components, tracks with replaceable pads, a fording kit, and a passive night vision devise. A later M60A3 variant included an improved fire control system that put the M60A3s performance significantly higher than Soviet tanks. Despite these improvements, the Army still feared the unknown in the capabilities of the T64 and T72 Soviet tanks. The Main Battle Tank Task Force was established in 1972 and established operational requirements for a new tank, including protection against Soviet 115mm main tank gun rounds, a 105-120mm main gun, an operating radius out to 325 miles, and a 92% probability of hitting a stationary target while stationary and 58% hitting a moving target while moving.²⁶

The Army initiated the XM1 program in 1972, and by 1976 two manufacturers delivered prototypes for testing. Trials began in 1976 and the Chrysler Corporation won the competition, delivering the first production M1 Abrams tank in February 1980. The

²⁴ Duncan Crow and Robert Joseph Icks. *Encyclopedia of Tanks* (London, UK: Barrie & Jenkins, 1975), 214; Cameron, "American Tank Development during the Cold War," 35.

²⁵ Orr Kelly, *King of the Killing Zone* (New York: W.W. Norton, 1989), 42.

²⁶ Cameron, "Pushing the Envelope of Battlefield Superiority: American Tank Development from the 1970s to the Present," 8-9.

M1 possessed the most advanced armor in the world, was turbine engine powered, and had an advanced gun system. Within 20 years, the Army purchased nearly 10,000 M1 tanks. Of these, 7267 remain in service through the Active and Reserve Components.

The United States Marine Corps, also equipped with the M60 series tank through the 1960s and 70s, decided to purchase M1s in the late 1980s. To meet their specific requirements, the Marines added deep water fording kits and additional provisions for securing the tanks for ship movement, saving money without having to develop a special tank for amphibious operations.²⁷ The first Marine M1 rolled off the assembly line in December 18, 1990.²⁸ To date the Marines have purchase and used 403 M1 Main Battle Tanks.²⁹

After failing to come up with a solution in a joint venture with the Germany, the Army, leveraging some lessons and technology from the MBT-70 program, went on its own and developed the M1. When fielded it was the most technologically advanced tank in the world and proved its effectiveness in the Gulf War in 1991.

The UH-60 Helicopter

In the late 1960s, the Army began searching for a replacement aircraft for the venerable UH-1 Iroquois (also known as the Huey) helicopter that would fully meet requirements of troop transport, combat re-supply, command and control, medical

²⁷ Foss, *Jane's Armour and Artillery*, 130; Cameron, "Pushing the Envelope of Battlefield Superiority: American Tank Development from the 1970s to the Present," 10.

²⁸ Jon T. Hoffman, *USMC: A Complete History* (Quantico, VA: Marine Corps Association, 2002), 639.

²⁹ Jane's Defense, "General Dynamics Land Systems M1/M1A1/M1A2 Abrams MBT." IHS Janes Dense & Security Intelligence & Analysis. https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=Reference&ItemId=+++1327751&Pubabbrev=JAA_ (accessed March 27, 2013).

evacuation, reconnaissance and a myriad of other combat support missions.³⁰ The program, called the Utility Tactical Transport Aircraft System (UTTAS), began forming requirements for a new helicopter that made improvements in performance, survivability, and reliability in hot temperatures and high altitudes.³¹ The General Electric Company was awarded the contract to provide the power plants for all competing designs.³² The initial requirements for the new helicopter were with an aircrew of three to carry eleven combat troops. The Army issued the UTTAS request for proposals (RFPs) in January 1972.³³ Five design proposals were submitted and the two designs selected for further testing were the Sikorsky YUH-60A and the Boeing Vertol YUH-61A.³⁴

The Sikorsky design proved superior and the Army received the first aircraft delivery on October 31, 1978.³⁵ Since then the Black Hawk has emerged as a program that has an unprecedented joint following. Other Services procure their variants of the Black Hawk through the Army's Utility Program Management Office, adding their specific Service requirements post-production and pay for the modifications. The Navy, Air Force, Coast Guard, as well as the U.S. Customs and Border Patrol, have procured these airframes for specialized missions.

³⁰ GlobalSecurity.org, "UTTAS (Utility Tactical Transport Aircraft System)," GlobalSecurity.org. <http://www.globalsecurity.org/military/systems/aircraft/uttas.htm> (accessed 15 February, 2013).

³¹ Ray D. Leoni, *Black Hawk: The Story of a World Class Helicopter*. (Reston, VA: American Institute of Aeronautics and Astronautics, 2007), 8-10.

³² Ibid., 8-11.

³³ "Helicopter History Site, UTTAS - Sikorsky UH-60 Blackhawk." <http://www.helis.com/programs/uttas.php>, (Accessed March 25, 2013).

³⁴ Ibid.

³⁵ Jane's Defense, "Sikorsky S-70A." IHS Jane's All the World's Aircraft." <https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=Reference&ItemId=+++1343474> (accessed March 27, 2013).

Each of these four programs demonstrate that when services have a requirement, they have the ability to develop a capability to meet that requirement on their own. In some cases, this capability is useful “as is” or with minor modifications to meet the requirements of another service. If this is the case, that second service gains efficiencies without having to invest the money in program development. Further, if that capability can be used without much modification, it makes that acquisition and delivery of that capability timelier. Since the ultimate objective for any acquisition program is to deliver a capability to the warfighter, it would appear that the best way to achieve that objective would be to put the responsibility of developing and procuring that capability on the service that requires it.

In the first two cases, McNamara played a significant role in the issue and the services made it work. He was looking at all options to make the Defense Department more efficient. Some accounts of the time reflect that McNamara forced the Air Force to purchase each of these airplanes while others tell a different story, a bit more devious using coercion. Whichever is the case, the Air Force made it work and both the F-4 and A-7 aircraft were adaptable enough to meet specific requirements. An additional factor the Air Force took into consideration was the growing involvement in Vietnam. Going with a design that was in production got them a plane faster than if they had to develop one from scratch on their own.

In the case of the M1 and the UH-60, there was no direct involvement by the Secretary of Defense and both are naturally cross service. The mission and purpose of armored forces in the Army and Marines is essentially the same, with the one notable exception of a core competency of the Marines Corps, amphibious assault. Outfitted with

a tank that had been in service since the 1960s, the Marines eventually decided, on their own, to forego the development costs and purchase the M1, adding fording kits to meet their needs. The Black Hawk's designation as a utility helicopter leads itself to multi-functional roles. Much like its predecessor, the Huey, which is still in service in the Marine Corps, the reliability and adaptability of the Black Hawk makes it relatively easy for other users to adapt it for their use. Each service that decides to include it in their inventory saves development money as well.

In all four cases, success was two-fold. First was the similarity of the capability each service needed. Second was that one service was already in the lead, and there was not an effort to change the basic design. Additional services took their specific requirements and applied them to the base model. Based on the capabilities required by the services and the capabilities of the platform involved, all four of these reflect a natural joint solution.

What makes these programs successful was the point at which the second Service entered the program. In both the F-4 and A-7, the Navy had already determined their requirements and were well underway into the development of the aircraft they needed. The F-4 was already in production for the Navy when the Air Force was persuaded to purchase the plane for its requirements. Modifications were relatively small and had no impact on Navy aircraft acquisition. While the A-7 appears to be a bit of a compromise by McNamara in that the Air Force was given near complete control of the TFX, the Navy solely developed the plane to meet its requirement. Air Force modifications to their version of the A-7 had no impact on the Naval requirement.

The M1 and UH-60 on the other hand had no direct involvement by the Joint Staff or the Secretary of Defense. Other Services, after seeing the finished product, decided to purchase what the Army developed and built in an effort to save resources. They did not require additional development cost outside that of configuring the equipment for their purpose. One can certainly not blame them for during this post-Vietnam War era all the services were drawing down acquisition programs and seeking ways to save money was prudent. The key here is the other Services made this decision, not the Secretary of Defense. Today, as this paper will show, we seem to have reverted to the 1960s with joint programs being directed by the Secretary.

CHAPTER 3: CASE STUDY 1: THE TACTICAL FIGHTER, EXPERIMENTAL

One of the earliest examples of a pre-Goldwater-Nichols joint program is the 1960s Tactical Fighter, Experimental (TFX). Unfortunately, it has also become the poster child for a joint acquisition program gone completely wrong. The TFX did not originate as a joint program but was the result of then Secretary of Defense Robert McNamara's decision to combine United States Navy and United States Air Force requirements into a common solution. Believing that he could save the Defense Department money by producing a multi-role airplane, Secretary Robert McNamara forced the two services to come to an agreement on capabilities desired for a new fixed-winged fighter in order to arrive at a joint solution. Neither service was particularly enthusiastic about the decision. Both the Navy and the Air Force already had requirements established and separate programs in different phases of development to meet their specific requirements.

United States Navy Requirements

The Navy had been searching for a new aircraft to conduct fleet defense. While such an aircraft could be used for other roles, such as providing close air support to Marines and Army ground troops, the primary mission requirement was to improve the aircraft carrier based aerial defense capabilities for the surface and sub-surface fleet. The threat the Navy expected to face in the future was enemy aircraft armed with air-to-

surface missiles that could range friendly ships from long distances.¹ The Navy envisioned a long-endurance aircraft circling at high altitude equipped with sophisticated high performance radar capable defending the fleet at distances of over 100 miles. The new Navy aircraft would identify potential threat aircraft well before they were close enough to engage the surface Navy with air to surface missiles. After identifying these threat aircraft, the Navy aircraft would engage at standoff distances up to 20 miles with long-range air-to-air missiles.² Once confirming identification of a hostile enemy aircraft, the new Navy fleet defense aircraft would engage to destroy the threat prior to the launch of the enemy air-to-surface missiles. While this concept undoubtedly required new technology in a long-range air-to-air missile, advanced radar and fire-control system, this discussion focuses on the determination of the aircraft platform to fulfill this mission.

While there was a consensus in the Navy as to the need for a new airplane, there was some disagreement as to the speed the aircraft. Some believed that supersonic flight would allow better self-defense. Naval proponents for supersonic capability believed that a subsonic fleet defense aircraft, once developed, produced, and delivered, would be obsolete by the time it was in service with the fleet. The other side of the argument within the Navy proposed that the plane did not need to be supersonic for two reasons. First, the combination of endurance, advanced radar and long-range air-to-air missiles

¹ Robert F. Coulam, *Illusions of Choice: The F-111 and the Problem of Weapons Acquisition Reform* (Princeton, NJ: Princeton University Press, 1977), 43.

² Robert J. Art, *The TFX Decision; McNamara and the Military* (Boston: Little, Brown, 1968), 25.

would negate the need for supersonic flight. Second, the Navy was already delivering the F-4 Phantom into the inventory as an advanced fighter-bomber.³

Technology at the time dictated the advanced panoramic radar needed for enemy aircraft identification to be five feet in diameter. This large radar would necessitate an aircraft with a large nose section. To achieve supersonic flight the aircraft would have either to forego the radar, and thus the missiles, or have the nose elongated to a point where carrier operations were no longer tenable.⁴ Eventually the accompanying proposed air-to-air missile outweighed the need for supersonic flight since the missiles would allow engagement of enemy fighters well before they entered the visual range of the fleet.⁵

Proponents of the subsonic aircraft design won out in the end. In addition to the mission requirements for the aircraft, budgetary constraints likely influenced the decision. A supersonic aircraft would have been more expensive to produce. By going with a less costly airframe solution, the Navy would be able to invest the savings into development of the long-range missiles and advanced avionics required.⁶

In late 1959, the Navy acquisition process selected the F-6D Missileer, made by the Douglas Aircraft Company, as the new aircraft for fleet defense. A sub-sonic aircraft met the Navy's requirements of being able to loiter for long periods at distances far from the aircraft carriers; the Missileer would possess a powerful radar capability that would identify threat aircraft and engage them at safe distances from the surface fleet.⁷

³ Coulam, 44.

⁴ Art, 26.

⁵ Ibid., 26.

⁶ Coulam, 44.

⁷ Enzo Angelucci and Peter M. Bowers, *The American Fighter* (New York: Orion, 1987), 95.

United States Air Force Requirements

Air Force Tactical Air Command (TAC) was the major command in the Air Force at the time responsible to “organize, equip, train, administer, and operate forces.”⁸

Within the equip portion of the mission, the three basic missions charged to TAC were:

...(1) *close air support*—air cover for friendly ground troops; (2) *air superiority*—control of the skies over the combat zone, and (3) *air interdiction*—reduction of enemy supply and mobility capability through aerial bombardment., special operations, tactical air control, and support units.⁹

The vision of the TAC’s Commander, General F. F. Everest, was to develop a future fighter that could conduct all three missions. The best airframe the Air Force had at this time was the F-105 Thunderchief, a solid supersonic fighter-bomber developed and built in the 1950s, but it did not meet all TAC’s requirements. The requirements TAC developed for their new aircraft were: travel non-stop across the Atlantic Ocean without the need for aerial refuel; ingress into the battle area at low-level to avoid enemy early radar warning detection, deliver ordnance on target, and egress to unprepared airfields somewhere on the European continent. To maximize the effects on the target the aircraft needed to possess the ability to carry large amounts of ordnance. To perform the air superiority mission it was necessary to conduct aerial combat engagements at high altitudes at speeds over 1,700 miles per hour.¹⁰

These diverse tasks required a new type of aircraft, capable of varying missions and flight profiles, potentially within the same flight. To fly at high rates of speed

⁸ United States Department of the Air Force, *Organization and Functions, Headquarters Tactical Air Command*. (Langley Air Force Base, VA: Department of the Air Force, Headquarters, Tactical Air Command, 1978), xi.

⁹ Coulam, 87.

¹⁰ Art, 17-8.

necessitated the airframe would have to have a narrow front profile and a swept wing design. To fly across the Atlantic without the need to re-fuel required the fuselage and wing design to be aerodynamically efficient at moderate airspeeds to maximize endurance and minimize fuel consumption. Lastly, the engines would have to be powerful enough to support landing at short, un-improved airfields or landing strips and the aircraft would have to be equipped with nearly straight wings with flaps or other lift enhancing devices.

To meet these requirements, any design would have to include the ability to vary the angle of sweep in the wings for the two different flight profiles, swept back for supersonic flight and/or the fast ingress across Europe to engage targets and swept forward for the long flight across the Atlantic to reach Europe. This variable-sweep wing design was not entirely new. Both the Grumman Company and the Bell Aircraft Company had experimented with this technology in the 1950s but neither was suitable for production due to unstable flight conditions.¹¹

In March of 1960 researchers at the Langley Research Center, a part of the National Aeronautics and Space Agency (NASA), believed they had a solution to the problems that Bell and Grumman experienced. The following month at a conference consisting of TAC, the Air Force Air Research and Development Command and NASA, the three parties reached an agreement to develop jointly a tactical fighter that would use this new variable swing-wing technology. The program moved quickly through the Air Force Headquarters, completing a feasibility study in June 1960 and receiving the Defense Department's Director of Research and Engineering (DDR & E) approval and

¹¹ Art, 20.

the issuance of a specific operational requirement (SOR). This requirements document, SOR 183, specifically laid out the operational requirements that any proposal for competition towards a material solution would have to meet.¹²

Change of Administration

In 1960, as President Eisenhower's administration entered its last days in office, it did not want to encumber the incoming Kennedy Administration with any new major defense programs. A directive from Secretary of Defense Thomas S. Gates, Jr., halted further development of the Navy F-6D Missileer program and prevented the Air Force from entering source selection for their TFX program. Further, the Secretary Gates directed that the DDR & E begin efforts to coordinate the requirements of both services into a single, multi-service fighter.¹³

Following his inauguration in January 1961, President Kennedy appointed Robert S. McNamara to succeed Secretary Gates to the head of the Defense Department. Secretary McNamara, as part of a larger administration goal to reduce redundancy in defense development and acquisition, was very interested in these two programs from the outset. President Kennedy's new doctrine of flexible response was a significant departure from Eisenhower's massive retaliation doctrine of the 1950s. The Eisenhower Administration focused their defense procurement decisions with enormous amounts of money invested in nuclear weapons development. Technology decreased the size of these weapons rapidly and the tactical nuclear weapon emerged. These smaller, yet still

¹² Art, 22.

¹³ Coulam, 45.

extremely effective weapons enabled smaller planes to deliver them. These capabilities allowed greater flexibility to the Defense Department on how to employ such weapons and Secretary McNamara began looking at a tactical employment method.

Having come from the business world and with the full support of the President, Secretary McNamara sought savings throughout the Defense Department throughout his tenure. In his second year, McNamara reported to the President on a cost reduction program outlining the reductions he planned for the next five years¹⁴. In that document, he cited President Kennedy's instructions to him:

1. Develop the force structure necessary to our military requirements without regard to arbitrary budget ceilings.
2. Procure and operate this force at the lowest possible cost.¹⁵

In order to meet the President's strategy, Secretary McNamara believed that he had to provide President Kennedy a wide range of options with which to respond to crisis. To meet this requirement while limiting the expenditure of resources he sought gain efficiencies wherever possible. A study team on limited war, one of four such teams that Secretary McNamara directed when he first took office, recommended that the Department should pursue a fighter-bomber program that could serve all services. Seeing the potential for a single plane built to meet the needs of both nuclear and conventional forces, while potentially saving money at the same time, Secretary McNamara was thrilled with one observer commenting that, "his eyes lit up like a pinball machine."¹⁶

¹⁴ Kaplan, Landa, and Drea, *History of the Office of the Secretary of Defense*. vol. 5, *The McNamara Ascendency, 1961-1965*, 454.

¹⁵ *Ibid.*, 455.

¹⁶ Henry L. Trewhitt, *Mcnamara* (New York: Harper & Row, 1971), 136.

Coming from the business world at the Ford Motor Company, Secretary McNamara must have had ingrained the philosophy that efficiency leads to profits, and that ridding redundancy and improving commonality as the keys to efficiency. Shortly after taking office, he merged the separate services intelligence organizations into the Defense Intelligence Agency and established the Defense Supply Agency. He also continued Secretary Gates' initiative by continuing to push the Air Force to pursue the Navy's proven F-4 fighter in lieu of its struggling F-105 program.¹⁷ The F-105, which began its development during the Korean War, became troubled with many requirements revisions and development delays following the Air Force's decision to suspend the program after the end of the war only to restart it again a year later.¹⁸

Perhaps using the F-4 as a model, Secretary McNamara leaned towards the TFX as it offered a multi-mission capable platform. The TFX, as explained by Air Force leadership, would be able to conduct long-range bomb engagements on enemy homeland targets, carry and deliver nuclear weapons with minimal radar detection, ensure air superiority, perform reconnaissance, and provide crisis response at distances far from the United States.¹⁹ The Navy's Missileer on the other hand was a single mission aircraft designed solely to conduct the fleet protection mission for the Navy. Secretary McNamara believed that if the TFX could provide all the aforementioned capabilities, could it not do more. If it possessed range long enough to cross the Atlantic, could the TFX loiter over a surface fleet to provide protection from potential adversaries? Could it not also provide effective close air support to Army and Marine ground forces? This

¹⁷ Shapley, *Promise and Power: The Life and Times of Robert McNamara*, 202-203.

¹⁸ Jerry Scutts, *F-105 Thunderchief* (New York: Scribner, 1981), 10-1.

¹⁹ Art, 33.

thought process led Secretary McNamara to order all the services to review and prepare feedback on the development of a joint experimental tactical fighter in February of 1961.²⁰

Less than a month later, Herbert F. York, Secretary McNamara's DDR & E, received a memorandum from Dr. James H. Wakelin, Assistant Secretary of the Navy for Research and Development informing him that:

...the Navy considers that the TFX is not suitable for Navy use since it has little or no application to meet Navy or Marine missions. The Navy now has better aircraft for our purposes in being and development.²¹

Secretary Wakelin further addressed that the Navy's F-4, a recent addition to the Navy's tactical fighter arsenal, and the continued development of the Missileer would be far better suited than the TFX for Navy missions and expressed doubts to the TFX's ability to perform carrier operations. In summary, he viewed the TFX as a "large, complex, expensive aircraft basically unsuited for limited war missions but useful for nuclear attacks."²² In response to the opposition to the TFX idea, Director York established a Committee on Tactical Air where the services representatives reviewed their requirements for tactical air. This committee would look at not only the TFX, but also the Navy Missileer program and the close air support requirements to both the Army and the Marine Corps. After months of meetings, the committee concluded that there was a requirement for two aircraft programs. The first was for a relatively cheap close

²⁰ Art, 34.

²¹ Ibid., 35.

²² Ibid.

support aircraft, later called the attack aircraft, experimental, or VAX. The second was the TFX.²³

Secretary McNamara approved the committee's recommendations to proceed with the development of the two programs. Further, he instructed the Secretary of the Air Force, Eugene M. Zuckert, to work with the Navy and try to come to agreement on the specifications that the Air Force had developed for the TFX essentially establishing the joint requirement for the development of the joint Navy-Air Force TFX. This was sure to set off the Navy from the start as the TFX and the requirements set forth in SOR 183 mirrored the Air Force Program requirements. Throughout the summer of 1961, these negotiations continued with little success until August when the deliberations reached a stalemate. Believing their requirements discounted, the Navy again asked for termination of the joint program in exchange for a separate service program. His TFX vision in jeopardy, Secretary McNamara issued his "Memorandum on September 1," ending the bickering between the Navy and Air Force. In this memorandum, he added criteria of performance beyond what the Air Force SOR-183 identified regarding performance and characteristics. He also directed that changes to the capabilities that the Air Force required remain to a minimum.²⁴

The decision on the required capabilities of the future aircraft made by the Secretary of Defense, the Navy and the Air Force entered into the Source Selection Board for the program. After four rounds of competition, the board determined that Boeing and General Dynamics showed the most promise and both entered the competition. As the

²³ Ibid., 38.

²⁴ Coulam, 55.

competition continued, the Air Force recommended the Boeing design while the Navy did not believe that either company's entry met their requirements.²⁵ Secretary McNamara, eager to get the program moving along, again entered the process, relaxing the commonality requirements between the services in an effort to achieve agreement. After the final round of competition, Boeing emerged as the acceptable design to both the Navy and Air Force and the board recommended awarding the contract for the TFX to Boeing.

On November 24, 1962, Secretary McNamara overruled the Source Selection Boards recommendation and awarded the contract to General Dynamics based on three main points. The General Dynamics design achieved a high 84% commonality of parts between the two versions of the aircraft while the Boeing design reached only 61%.²⁶ The Boeing design had engines equipped with reverse thrusters to reduce landing distances and some airframe components made of titanium to reduce the overall weight, neither of which at this point were a proven technology. Lastly, Secretary McNamara thought that the cost estimate provided by General Dynamics was more realistic.²⁷

With the airframe decided, the TFX program proceeded, designating versions of the aircraft the F-111A for the Air Force and the F-111B for the Navy. Design of the airframe progressed slowly over the next few years with both services remaining stalwart on meeting their specific requirements. Development and testing through the next several years proved the design was not well suited for fully meeting either service's requirements. In order to meet the requirements of both services the aircraft grew

²⁵ Art, 180-1.

²⁶ Art, 181.

²⁷ Coulam, 58.

heavier, eventually leading the Navy to believe that it was no longer viable for carrier operations. The Navy successfully lobbied both the House and Senate for support, ultimately leading Congress to eliminate all funding for the F-111B in 1968 altogether, the final step in ending the TFX program.

The Air Force proceeded with the F-111A and benefitted from the TFX deriving principally from their requirements. Due to the compromises for creating a joint program, the Navy F-111B aircraft did not fully meet their requirements. Perhaps in an effort to save face and not waste any more taxpayers' dollars, Secretary McNamara directed the Air Force to continue with the F-111A. While not fully meeting Air Force original requirements, the F-111A variant benefitted from the increased weight as the heavier airframe proved more stable at higher speeds. In fact, the F-111A successfully executed the type of long-range attacks envisioned by TAC when the Air Force conducted bombing missions originating from Thailand to Vietnam in 1968.²⁸ While it was able to perform this long-range bombing mission, it was a far from being able to conduct the air superiority missions that TAC originally envisioned in the 1950s.

In the end, the TFX failed miserably as a joint program. From the start, neither the Navy or the Air Force bought into the program. Each service already had an aircraft in mind for their future and in different stages of development. The Navy had selected the Missileer and was preparing to proceed with development. The Air Force established their requirements and stood ready to transmit their requirements to the defense industry for proposed solutions. Robert Art, author of *The TFX Decision: McNamara and the Military*, posits in his book that the disagreements on the technical aspects of the TFX

²⁸ Coulam, 56.

were not really about capability. Rather, he believes that this was a service identity struggle with, “the Air Force and Navy to keep their identities separate, distinct, and autonomous.”²⁹ While this is certain to have played a role, it is hard to blame the services. Title 10 US Code holds the services responsible to equip their respective forces with the best equipment that meets the needs of their individual service requirements.

Secretary McNamara’s effort to reduce waste in the Department of Defense and achieve some savings by forcing the Navy and Air Force into the TFX ended up costing nearly \$10 million more per aircraft in the end. In 1963, the Air Force estimated the cost of the F-111A at \$3.97 million each. At his testimony before The Permanent Subcommittee on Investigations, Committee on Government Operations, United States Senate, Mr. Elmer Staats, Comptroller General of the United States General Accounting Office testified that by the end of 1969 the Air Force’s estimated unit cost for the F-111 was \$13.32 million.³⁰ More telling is Mr. Staats opinion of the efforts of the Defense Department:

While the Department of Defense believed that the development and production of a common aircraft could save as much as billion dollars, I am of the opinion that the effort contributed to increased costs and to delays in development of an operational aircraft for both services. For example, the concern on the part of the Navy with increases in the weight of the aircraft--a matter of considerably lesser concern to the Air Force--undoubtedly delayed the availability of an operational aircraft. Furthermore, the concurrent production and development, coupled with a large number of changes throughout the program have been major contributing factors to the large cost growth and delayed delivery of the F-111 weapon system³¹

²⁹ Art, 44.

³⁰ Senate Committee on Committee on Government Operations, Permanent Subcommittee on Investigations, *The F-111 Aircraft Program*, 92d Cong., 1st sess., 1971, S. Hrg. 1504, (Statement of Mr. Elmer Staats, Comptroller General of the United States General Accounting Office), 2.

³¹ *Ibid.*, 3-4.

McNamara's insistence that the Navy and Air Force develop the aircraft together is what doomed it from the start. Further, the Navy already had an aircraft designed and selected, the Missileer, for their requirement while the Air Force was still in the proposal stage. Perhaps McNamara felt like he was balancing the services as he had given the Navy's F-4 the lead and the A-7 was looking to go in the Navy's favor as well. Unlike these programs in which the Air Force was limited to keeping modifications to a minimum, the TFX started with both services with the Air Force capability requirements. Whatever his reasons, McNamara's direct involvement by over-ruling the Source Selection Board and forcing the joint development did not work.

CHAPTER 4: THE RECENT PAST IN ACQUISITION REFORM

Another in a long line of commissions established to review the management of programs in the Department of Defense, the recently re-elected President Ronald Reagan created the President's Blue Ribbon Commission on Defense Management on June 17, 1985. It was established in part because of stories in the press regarding \$7,000 coffee maker as well as a reported \$600 toilet seat for the Navy's P-3 Orion aircraft, and a \$659 ashtray for the Navy's E-2C Hawkeye Electronic Surveillance Aircraft.¹ The Commission, commonly referred to as the Packard Commission after its chair David Packard, a successful businessman, co-founder of the Hewlett-Packard, and former Deputy Secretary of Defense in the Nixon Administration, found that several billions of dollars had been wasted in defense programs. The Commission reported in April 1986 that they found,

In general, we discovered, these problems were seldom the result of fraud or dishonesty. Rather they were symptomatic of other underlying problems that affect the entire acquisition system. Ironically, actions being prescribed in law and regulation to correct spare parts procurement tend to exacerbate these underlying problems by making acquisition procedures even more inflexible and by removing whatever motivation exists for the exercise of individual judgment.²

Additionally, the Commission's final report recommended calling for two-year defense budgets as opposed to annual appropriations, the creation of a "Procurement Czar" to oversee the vast weapons buying process, and strengthen the roles of the

¹ James R. Locher, *Victory on the Potomac: The Goldwater-Nichols Act Unifies the Pentagon*. (College Station, TX: Texas A&M University Press, 2002), 284, 290.

² Packard Commission, *A Quest for Excellence*, Final Report by the President's Blue Ribbon Commission on Defense Management (Washington, D. C.: The White House, June 1986), 5-6.

Combatant Commanders. The Commission also called for strengthening the position of the Chairman, Joint Chiefs of Staff, giving him more authority.³

Perhaps the most significant recommendations affecting joint requirements though were those that called for a restructuring of the Joint Requirements and Management Board (JRMB). The Commission recommended Congress create a new position of Under Secretary of Defense (Acquisition), or USD(A), who would have full authority to oversee all Defense Acquisition System and Programs. The Commission further recommended the Department of Defense designate Service Acquisition Executives to oversee the acquisition processes within their respective service. Noting that mismanagement of joint programs and major service programs from the start can quickly lead to failure, the Commission recommended restructuring of the JRMB to make the decisions on tradeoffs between the user requirements when compared to the projected schedule and costs. Under the recommended co-chairmanship of the USD (A) and a newly created Vice Chairman of the Joint Chiefs of Staff (VCJCS), the Commission envisioned the JRMB would have the authority to approve full-scale development and production of all joint programs and major Service programs, and would specifically direct the JRMB to:

1. require the testing of prototype systems and subsystems before the authorization of full-scale development;
2. require the use of baselining for all major new programs;
3. require that operational test data be available before the authorization of high-rate production; and
4. significantly increase the use of nondevelopmental items as an alternative to new development programs.⁴

³ Evan Thomas, Barrett Seaman and Bruce Van Voorst, "Defensive About Defense," *Time*, March 10, 1986, 43.

⁴ Packard Commission, 32-3.

Many of these recommendations were taken up within a year with the passing of the Goldwater-Nichols Act in 1986, though they did not move to make joint requirements and acquisition more desirable for the Services.

The Goldwater-Nichols Act, signed into law on October 1, 1986, is the most recent major effort to streamline and synchronize the military and its control by civilian authority. In part, the law brought together the Services to achieve better effects mutually as opposed to along strictly Service lines, forcing the Services to work together on requirements development in the JRMB. Along some lines of procurement, there are significant areas where this helped the joint force with Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) being the most significant.

The Joint Staff established the Joint Requirements Oversight Council (JROC), the successor to the Joint Requirements and Management Board, in 1986 with membership consisting of the Vice Chiefs of Staff of the Services and the Director of the Joint Staff. The position of Chairman of the Board was rotated through the Service Vice Chiefs annually. The Vice Chairman Joint Chiefs of Staff (VCJCS) later supplanted the Director of the Joint Staff in April 1987, when that position was created after the passage of the Goldwater-Nichols Act, with the VCJCS becoming the permanent chairman of the JROC.⁵ Reducing redundancies, resolving interoperability issues and gaining efficiencies through combining individual service requirements for two or more services were the main purposes of the council. Further, once a joint requirement agreement was made,

⁵ William A. Owens and James R. Blaker. "Overseeing Cross-Service Trade Offs," *Joint Forces Quarterly*, no. 13 (Autumn 1996): 37.

JROC members worked to define the resourcing required to meet the requirement. The Goldwater-Nichols Act required the Chairman of the Joint Chiefs of Staff to provide advice to the Secretary of Defense on requirements, and the JROC provided the research and decisions to validate the proposals to fill the capability requirements for major acquisitions for the joint force.⁶

Each successive VCJCS increased the role and influence of the JROC. In 1994 when Admiral William A Owens became the third VCJCS, he established an analytical process called the Joint Warfare Capabilities Assessments (JWCAs) that operated outside the normal joint staff process to provide new ideas that were free of service biases.⁷ One criticism of the JROC is that there is no permanent representation from the Combatant Commanders. As recently as 2010, membership in the JROC consisted of the Chairman, Joint Chiefs of Staff, whose functions as the JROC Chairman were delegated to the VCJCS, and “officers in the grade of general or admiral from the Army, Navy, Air Force, and Marine Corps. Service representatives are recommended by their military department secretary and approved by the Chairman after consultation with the Secretary of Defense.”⁸ Combatant Commander participation to the JROC was through a standing invitation to attend JROC sessions in an advisory capacity. Further, the Council sought and considered input from the Combatant Commanders to assist the Chairman in “identifying, assessing, and approving joint military requirements to meet the national

⁶ Ibid.

⁷ Ibid.

⁸ CJCSI 5123.01E, Charter of the Joint Requirements Oversight Council, 17 April 2010, A-2.

military strategy” and in the “consideration of trade-offs among cost, schedule, and performance objectives for joint military requirements.”⁹

In January 2012, the Chairman updated the JROC Charter, expanding membership to include “officers in the grade of General or Admiral from the Services and Combatant Commands.”¹⁰ Service representatives are required to attend while Combatant Command representatives are “highly encouraged to participate as voting members of the JROC when matters related to the area of responsibility or functions of that command will be under consideration by the JROC.”¹¹

Inclusion of the combatant commanders appears to be a step in the right direction. Ultimately, as the warfighting commanders, the combatant commanders should have a vote in the capabilities required to execute operations within their command. A JROC consisting solely of Service chiefs lends itself to the possibility of developing systems and platforms to address service needs, not needs of the joint force. The Services, represented in the JROC process, have a stake in programs that work to fulfill service requirements while benefitting the joint force as a whole. In theory, combatant commanders should be able to provide unbiased input into major Service-specific acquisition programs.

⁹ Ibid., A-1.

¹⁰ CJCSI 5123.01F, Joint Requirements Oversight Council Charter 10 January 2012, A-4.

¹¹ Ibid.

CHAPTER 5: CASE STUDY 2: THE JOINT CARGO AIRCRAFT

The second case study this paper examines the post-Goldwater-Nichols Joint Cargo Aircraft (JCA) program. The requirement for the capability this program addresses is the mission to perform time-sensitive/mission-critical intra-theater lift. The Army established a requirement to address a capability shortfall delivering time-sensitive/mission-critical personnel and cargo to the last tactical mile during combat operations in Iraq and Afghanistan. This touched off the most recent disagreement in a long, contentious, and recurring rivalry in the Department of Defense, second only to perhaps the annual Army-Navy football game. It is also the most recent example of a material solution to a joint requirement that appears to have met the end of its life. This time though the cause was not a material solution failure or services not coming together successfully on requirements, but the application of the capability required. The origins of the debate trace back to 1947 when the Army Air Forces were separated from the Army to establish the Air Force as an independent service.

Congressional hearings on postwar military policy began in April 1944, even before World War II had ended in an effort to unify the military services.¹ Three years later, and less than two years of the formal surrender ceremony of the Japanese to the United States aboard the USS Missouri, the reorganization of the United States military was set. The National Security Act of 1947 created the National Military Establishment (renamed in 1949 the Department of Defense). This included creating within the establishment, among other things, the position of the Secretary of Defense, the Joint

¹ Christopher C. S. Cheng, *Air Mobility: The Development of a Doctrine*. (Westport, CT: Praeger Publishers, 1994), 17.

Chiefs of Staff and the Department of the Air Force. The Department of War became the Department of the Army. Additionally, a civilian Secretary, appointed by the President, headed all three services.

The establishment of the United States Air Force included the transfer of the Army Air Forces, the Army Air Corps, and the General Headquarters Air Force to the Department of the Air Force.² The first attempt to delineate the functions of the now separate Army and Air Force was contained in the National Security Act of 1947. In the law, the Army, in general, includes:

...land combat and service forces and such aviation and water transport as may be organic therein. It shall be organized, trained, and equipped primarily for prompt and sustained combat incident to operations on land. It shall be responsible for the preparation of land forces necessary for the effective prosecution of war except as otherwise assigned and, in accordance with integrated joint mobilization plans, for the expansion of peacetime components of the Army to meet the needs of war.³

The law did not affect aviation assets organic to units of the Army Ground Forces as they had already proven their value during the war.⁴ The functions of the new Air Force included:

...aviation forces both combat and service not otherwise assigned. It shall be organized, trained, and equipped primarily for prompt and sustained offensive and defensive air operations. The Air Force shall be responsible for the preparation of the air forces necessary for the effective prosecution of war except as otherwise assigned and, in accordance with integrated joint mobilization plans, for the expansion of the peacetime components of the Air Force to meet the needs of war.⁵

² National Security Act of 1947.

³ Ibid, § 205.

⁴ Cheng, 17.

⁵ National Security Act of 1947, § 208.

The subsequent Executive Order 9877, signed by President Truman the same day, attempted to delineate the functions of the Army, the Navy, and the Air Force by identifying the each service's primary functions. As directed by the order, the President directed the specific functions of the Services to include:

Army:

- ...organize, train and equip land forces for:
- ...operations on land, including joint operations.
- ...seizure or defense of land areas, including airborne and joint amphibious operations.
- ...occupation of land areas.
- ...develop weapons, tactics, technique, organization and equipment of Army combat and service elements, coordinating with the Navy and the Air Force in all aspects of joint concern, including those which pertain to amphibious and airborne operations.
- ...assist the Navy and Air Forces in the accomplishment of their missions, including the provision of common services and supplies as determined by proper authority.

Air Force:

- ...air lift and support for airborne operations.
- ...air support to land forces and naval forces, including support of occupation forces.
- ...develop weapons, tactics, technique, organization and equipment of Air Force combat and service elements, coordinating with the Army and Navy on all aspects of joint concern, including those which pertain to amphibious and airborne operations.⁶

Both the National Security Act and the Executive Order were vague enough between what we now call the roles and missions of the Armed Forces, specifically with regard to logistics support to ground forces. Perhaps seeing this, the Army established their missions in Army Regulation 95-5 to include, "expediting and facilitating the conduct of operations on land; improving mobility, command, control, and logistic support of the Army forces; and facilitating greater battlefield dispersion and

⁶ Executive Order number 9877, *Functions of the Armed Forces*, (July 26, 1947).

maneuverability under the condition of atomic warfare.⁷ Providing logistics to its forces on land therefore would require the Army to continue to develop new methods of distribution as technology advanced.

The new Secretary of Defense James Forrestal recognized there were inconsistencies between the National Security Act and the Executive Order. This was due in part to the President's desire to publish the documents simultaneously. In January of 1948, the Joint Chiefs of Staff rebuffed an attempt by Secretary Forrestal to address some of the inconsistencies between the documents. This led to a conference between Forrestal and the Joint Chiefs in March of 1948 in Key West, Florida. Two main points of contention emerged between the services. The first involved the role of naval carrier aviation in strategic air operations. The second was whether the Army or Air Force would have primary responsibility for land-based air defense.⁸

The agreement, attained on March 20, 1948, following the Key West Conference, was labeled the "Functions of the Armed Forces and the Joint Chiefs of Staff." The President approved and signed the agreement on April 21 of that year.⁹ President Truman accompanied this agreement with his Executive Order 9950, revoking Executive Order 9877.¹⁰ These new documents attempted to clarify for the services their roles and missions, giving them specific primary and secondary functions. Highlights of the

⁷ Richard P. Weinert and Susan Canedy, *A History of Army Aviation, 1950-1962* (Fort Monroe, VA: Office of the Command Historian, U.S. Army Training and Doctrine Command, 1991), 10.

⁸ Richard Irving Wolf and the United States Air Force. *The United States Air Force: Basic Documents on Roles and Missions* (Washington, D.C.: Office of Air Force History, U.S. Air Force, 1988) 151.

⁹ James Forrestal, Secretary of Defense. *Functions of the Armed Forces and the Joint Chiefs of Staff* (Washington, D.C.: April 21 1948), 1.

¹⁰ Executive Order number 9950, Revoking Executive Order No. 9877 of July 26, 1947, Prescribing the Functions of the Armed Forces, (April 21, 1948), 1.

“Functions of the Armed Forces” agreement expanded and clarified those of the National Security Act of 1947 as follows:

In enacting this legislation, it is the intent of Congress...to provide three military departments for the operation and administration of the Army, the Navy (including naval aviation and the United States Marine Corps), and the Air Force, with their assigned combat and service components; to provide for their authoritative coordination and unified direction under civilian control but not to merge them...The functions stated herein shall be carried out in such a manner as to achieve: integration of the Armed Forces into an efficient team of land, naval, and air forces...and prevention of unnecessary duplication or overlapping among the Services, by utilization of the personnel, intelligence, facilities, equipment, supplies and services of any or all Services in all cases where military effectiveness and economy of resources will thereby be increased...Coordination of Armed Forces operations to promote efficiency and economy and to prevent gaps in responsibility.¹¹

...Functions of the United States Army include land combat and service forces and such aviation and water transport as may be organic therein. It is organized, trained, and equipped primarily for prompt and sustained combat operations on land.¹²

...Functions of the United States Air Force include air combat and service forces. It is organized, trained, and equipped primarily for prompt and sustained combat operations in the air. The Air Force is responsible for...logistical air support to the Army, to include air lift, support, and resupply of airborne operations...and provide air transport for the Armed Forces.¹³

In a very broad sense, these documents outline the functions of the services by their domain, that is the Army on land, the Navy at sea and Air Force in the skies.

Secretary Forrestal, anxious to put the roles and missions controversy behind him, was surprised to find reports in the press soon after their return to Washington that some of the services were unhappy about the agreement. The unhappiness was more skepticism

¹¹ Forrestal, 2-3.

¹² Ibid., 7.

¹³ Ibid., 11.

than anything else as the services questioned whether they could de-conflict the operations that overlapped their domains, overlapping air operations, strategic bombing, and concurrent Army and Marine Corps ground operations to name a few.¹⁴ For the Army the intra-theater lift mission is tasked to them by reading “such aviation...organic therein” to provide “prompt and sustained combat operations on land.”¹⁵ This wording would prove problematic for years to come.

Together, the Army and the Air Force came to terms on a number of other issues following the Key West Agreement. The first was an interservice agreement called the “Army-Air Force Agreement as to the initial implementation of the National Security Act of 1947, 15 September 1947.”¹⁶ This agreement did not establish limits on the types and quantity of organic Army aviation. Rather, it reiterated that the Air Force would remain responsible for the organization, equipping, and operating of liaison squadrons for the Army’s use. Further, the agreement stipulated that the Army would provide ground transportation and the Air Force would provide air transport for both services.

Two years later another agreement reached between the Army and Air Force was the Joint Army and Air Force Adjustment Regulation (JAAFAR) 5-10-1, which defined the question of the composition of organic Army aviation. This regulation, issued in May of 1949 in conjunction with the Bradley-Vandenberg Agreement, specified that the Army would possess two types of aircraft, both fixed and rotary wing. Fixed-wing aircraft were restricted to a maximum weight of 2,500 pounds while rotary wing aircraft were limited

¹⁴ Steven L. Rearden and United States Department of Defense Historical Office. *The Formative Years, 1947-1950*. (Washington, D.C.: Historical Office, Office of the Secretary of Defense, 1984), 393-5.

¹⁵ Forrestal, 7.

¹⁶ Cheng, 19.

to a maximum of “3,500 to 4,000” pounds.¹⁷ These aircraft improved operations in forward areas of the battlefield performing functions similar to those of the Army Liaison planes of World War II, and specifically included “limited aerial resupply.”¹⁸ This was a departure from the status quo for the Army. During World War II, there was no weight restriction. The only a restriction on Army planes was that they possessed more than two seats. This new weight limitation did however open the door for multi-passenger planes as long as they stayed below the weight threshold.

As the Korean War began, disagreement between the Army and the Air Force again rose over the issue of tactical airlift. In 1950, a Department of the Army study group that had been exploring options for the use of air transport in Army units recommended to the Chief of Staff, General Lawton J. Collins, that the Army conduct an experiment. This experiment involved the employment of an infantry battalion with helicopters to test the concept of organic air transportation to the ground force. General Collins approved the study group’s recommendations in 1951 and the Army began developing the plan to establish five helicopter transport companies. General Collins requested the Air Force to expedite the purchased of the H-19 Chickasaw and the H-21 Shawnee helicopters for the Army since both of these airframes exceeded the 4,000 lbs. limitation. The Air Force Chief of Staff, General Hoyt S. Vandenberg, disagreed with the request, believing that the Air Force assault squadrons would provide the transportation necessary for the ground forces. This stalemate between the Chiefs of Staff resulted in the elevation of the issue to the service secretaries, Secretary of the Army, Frank Pace,

¹⁷ Weinert and Canedy, 10.

¹⁸ Ibid.

Jr., and the Secretary of the Air Force, Thomas K. Finletter.¹⁹ Another issue that arose with the helicopter debate to the Secretary level was that of fixed-wing aircraft. The Army requested to purchase a number of L-20 Beaver utility airplanes. These planes broke the fixed-wing weight threshold by 500 lbs. and Air Force contended that it still had the responsibility in the field of air transport.

In October 1951, after exhaustive discussions, the Secretaries reached an agreement. The new agreement removed all weight limitations on aircraft desired by the Army. A functional limitation took its place with the intent of eliminating any duplication between the Army and Air Force. Further, the Army had to specify the purpose of organic aviation. The role of these organic aircraft was to provide the Army with a flexible and responsive air component while conducting ground combat procedures in the forward battle area. Specific tasks included were to provide aerial observation, command and control, liaison and courier services, and, “transportation of Army supplies, equipment, and small units within the combat zone.”²⁰ It further defined the combat zone stating, “the rear boundary of the combat zone is designated by the theater commander and is changed to conform to the movement of the armed forces. It is understood that the combat zone will not normally exceed 50-70 miles in depth.”²¹

This Memorandum of Understanding would prove short lived as differences between the two services as to the roles and missions of aviation persisted through the remainder of 1951 and early 1952. With the weight limitation removed, the Army

¹⁹ Weinert and Canedy, 16-7.

²⁰ Thomas K. Finletter and Frank Pace, *Memorandum of Understanding Relating to Army Organic Aviation* (Washington, D.C.: United States Army, United States Air Force), October 2, 1951, 1

²¹ Ibid.

continued to purchase larger transport helicopters. These increased requests to purchase more helicopters, coupled with requests for more fixed-wing aircraft and the role of Army and Air Force helicopter transport, caused the services to enter into discussions once more. With the services unable to reach an agreement, the matter was elevated to the Secretary of Defense, Robert Lovett, who forced an agreement.²²

The result was a second Memorandum of Understanding, signed on November 4, 1952 and known as the Pace-Finletter Agreement of 1952, that widened the missions that Army helicopters could be used for while maintaining the removal of the weight restrictions agreed to just over three years before. Specifically, the Pace-Finletter Agreement of 1952 built upon the 1949 Key West Agreement and further defined the verbiage in the National Security Act of 1947, stating in paragraph 1:

The National Security Act of 1947 as amended in 1949 provides, in general the Army shall include land combat and service forces and such aviation and water transport as may be organic therein. It is the purpose of this memorandum to delineate in the foregoing quotation the phrase, "such aviation as may be organic therein," in order to ensure that the U.S. Army may employ aircraft necessary for its internal requirements in the conduct of operations on land, without infringement upon the missions assigned to the U.S. Air Force.²³

The agreement further re-instated the weight limit for fixed-wing aircraft, but increased the limitation to 5,000 lbs., and expanded the combat zone now defined as 50 to 100 miles deep. Perhaps most telling of this second Pace-Finletter MOU was the view

²² Cheng, 42.

²³ Thomas K. Finletter and Frank Pace, *Memorandum of Understanding Relating to Army Organic Aviation* (Washington, D.C.: United States Army, United States Air Force), November 4, 1952, 1.

within the Air Force to acquiesce to the Army its expanding tactical use of aviation on the battlefield in favor of pursuing strategic air requirements.²⁴

Following the Korean War, General Matthew B. Ridgeway, General Collins successor as Chief of Staff of the Army, continued to look into expanding the role of Army aviation. His support included a five-year plan, called the Army Aviation Plan, to grow the aviation force nearly 5,000 airframes from an inventory of 3,516 in 1954 to 8,486 by 1959.²⁵ General Nathan Twining, Chief of Staff of the Air Force at the time, thought the Army Aviation Plan to increase airframes, while almost quadrupling their manning to nearly 50,000 soldiers, was duplicative and a waste of resources.²⁶ The June 1955 Semiannual report of the Secretary of the Army emphasized the importance of the helicopter companies to the Army, highlighting the tactical mobility this helicopter force provided.²⁷

In 1956, Army Chief of Staff, General Maxwell D. Taylor, General Ridgeway's successor, expanded the Army Aviation Plan to a program objective of just under 10,000 airframes by fiscal year 1960. Furthermore, Secretary of the Army Wilbur M. Brucker requested in September 1956, that Secretary of Defense Charles E. Wilson remove all weight restrictions on Army aircraft. Throughout the fall negotiations continued between the Army and DoD. In the end, Secretary Wilson decided to maintain the weight restriction, but he did open the door a bit allowing for exceptions on a case-by-case basis.

²⁴ Wolf et al., 241.

²⁵ Cheng, 90.

²⁶ Weinert and Canedy, 110.

²⁷ Cheng, 91-2.

The Army wasted no time in exploiting this opening, asking to purchase new 3-ton transport planes, for which they received approval.²⁸

In 1957, Secretary Wilson attempted to clarify the Pace-Finletter agreement of 1952 by further defining the roles and missions of the services. This policy, known as Defense Directive 5160.22, while retaining the 5,000 lbs. limit of Army fixed-wing aircraft, did impose a 20,000 lbs. limitation on helicopters. Details of the policy also expanded the definition of the combat zone to include, “not more than 100 miles forward of the general line of contact between U.S. and enemy forces” and “normally extends back of the front line about 100 miles.”²⁹ Delineating the roles and missions between the services was significantly clearer in this directive, while still holding the Air Force responsible for providing close air support and logistical air support to the Army.

Specifically, further directing the Air Force to provide:

- a. Airlift of Army supplies, equipment, personnel and units from exterior points to points within the Army combat zone.
- b. Airlift for the evacuation of personnel and material from the Army combat zone.
- c. Airlift for the air movement of troops, supplies, and equipment in the initial and subsequent phases of airborne operations.
- d. Aeromedical evacuation from Air Force operating locations within the combat zone through Air Force casualty staging units to hospital facilities outside the combat zone.³⁰

The agreement directed the Army to carry out specific functions of its Aviation Program for functions within the Army combat zone. These included:

- a. Command, liaison, and courier and communications.
- b. Observation, visual and photographic reconnaissance, fire adjustment and topographical survey.

²⁸ Weinert and Canedy, 110-1.

²⁹ Wolf et al., 319-20.

³⁰ Ibid.

- c. Airlift of Army personnel and material. Transportation of Army supplies, equipment, personnel, and small units within the Army combat zone in the course of combat and logistical operation...includes expeditious movement of critically needed supplies or equipment, or both, within the combat zone, supplementing the ground transportation system operating within the field Army.
- d. Aeromedical evacuation within the Army combat zone to include battle-field pickup of casualties, air transport to initial point of treatment and any subsequent moves to hospital facilities within the Army combat zone.³¹

Over the next several years, the Army asked for and received approval from DoD to procure fixed-wing aircraft that exceeded the weight limit. These included the OV-1 Mohawk reconnaissance plane and the CV-2 Caribou, the latter of which would spark the next round of the inter-service airlift argument.

The Caribou was a Canadian built de Havilland transport plane. It was equipped with twin engines and capable of performing operations from airfields that required short take-offs and landings. Its cargo hauling capacity fit nicely between the Air Force C-130 and the Army's heavy cargo helicopters. The Army procured the Caribou to deliver soldiers and supplies from major airfields in the rear of the theater to forward landing strips closer to the front lines. The Caribou was capable of delivering two combat loaded Jeeps with their associated crews.³² At the recommendation of the Howze Board, an Army board operating under the leadership of Lieutenant General Hamilton Howze, the Army appeared ready to adopt the airmobile concept. Under this concept, the Board recommended the creation of air assault divisions, which would be equipped with organic aircraft to move troops into battle. The Army organized separate air transport units with

³¹ Wolf and The United States Air Force, 321-2.

³² David Donald and Jon Lake, *Encyclopedia of World Military Aircraft, Volume 1* (London, UK: Aerospace Publ., 1994), 145.

heavy helicopters and Caribous. By 1964, the Army planned to have more than 250 Caribous.³³ The Air Force, conversely, had its own recommendations.

Chaired by Lieutenant General Gabriel P. Disosway, Vice Commander of Tactical Air Command (TAC), the Air Force Board agreed that the Army needed improvements in air mobility, but thought that improvements in the “existing and proven” capabilities of the Air Force were a better approach³⁴. From the Air Force position the C-130 Hercules, capable of carrying six times the cargo of the Caribou, was the best platform to provide support to the Army. Additionally, the C-123 Provider, a cargo plane about half the size of the C-130, could still carry twice as much as the Caribou. The benefit of the Caribou is that it required nearly half of the runway length of the C-123 thus opening up more opportunities for delivery of cargo.³⁵

In July 1962, a detachment of eight Army Caribou moved to Vietnam and quickly proved their value. Moving troops and equipment during the establishment of a new camp at Lao Bao, they made use of the airfield there that was inaccessible to the larger C-123.³⁶ As the Vietnam War escalated through 1963 and 1964, the Air Force began moving C-123, and later C-130, units to Vietnam to better support the ground fight. As the Air Force airlift allocation system matured in theater, the Air Force began to pursue the Caribou fleet. Major General Joseph A. Moore, Commander of the 7th Air Force, proposed in a letter to General William C. Westmoreland, Commander of the United States Military Assistance Command, Vietnam, that the two Caribou companies in

³³ Ray L. Bowers. *Tactical Airlift*. (Washington, D.C.: Office of Air Force History, U.S. Air Force, 1983), 31.

³⁴ *Ibid.*, 109.

³⁵ *Ibid.*, 110.

³⁶ *Ibid.*, 110-1.

Vietnam fall under the Southeast Asia Airlift System in order to provide more efficiently service and reduce the possible redundant footprint at air bases. Westmoreland rejected the proposal believing the Army better employed these smaller transport planes in direct support of the ground commander.³⁷

Concurrently, the Army was also looking to procure another large transport airplane. The CV-8 Buffalo, another de Havilland built aircraft, was larger than the Caribou but still offered the short take-off and landing capability that the Army required. The Army authorized the production of four proto-types.³⁸ Two deployed to Vietnam as part of an evaluation in late 1965.³⁹ The Air Force, opposed to this new acquisition, gained the support of Secretary of Defense McNamara who deferred further procurement in December 1965.⁴⁰

This acquisition decision, as well as the continued use of the Caribou in Vietnam, further sparked the rift between the Army and the Air Force and the responsibility of providing intratheater logistical support to the Army. In February 1965, General John P. McConnell, assumed the position as the Air Force Chief of Staff after the retirement of General Curtis LeMay. General McConnell was determined to address the differences in the Army and Air Force different perspectives on the use of tactical airlift. Using the Army's low usage rates of the Caribou in Vietnam, he entered into private talks with Army Chief of Staff, General Harold K. Johnson. General Johnson, concerned that intratheater lift was not as responsive as needed, sought to maintain control of the Army's

³⁷ Bowers, 236-7.

³⁸ Donald and Lake, 146.

³⁹ Wayne Busar, "DHC-5/C-8 Buffalo," The deHavilland Caribou (DHC-4) and Buffalo (DHC-5) Website, <http://www.dhc4and5.org/Buffalo.html> (accessed March 9, 2013).

⁴⁰ Bowers, 237.

tactical airlift assets. General Earle G. Wheeler, Chairman of the Joint Chiefs of Staff, supported these private meetings.⁴¹

The Army and Air Force reached an agreement on April 6, 1966. The main provisions were that the Army would “relinquish all claims for CV-2 (Caribou) and CV-7 (Buffalo) aircraft and for future fixed-wing aircraft designed for tactical airlift. These assets now in the Army inventory will be transferred to the Air Force.”⁴² Further, the Army received assurances that the Air Force would no longer pursue the helicopter support role, keeping rotary wing aircraft solely for air special operations and combat search and rescue roles. Not all in the Army were supportive of this agreement, believing that they had traded a real capability for an essentially “hollow” deal.⁴³ The agreement did permit the Army to continue to develop armed helicopters, relieving pressure on another source of friction between the services on whether these aircraft were crossing the line with the Air Force close air support mission.⁴⁴

The Army in turn was assured that the Air Force would “retain the CV-2 and CV-7 aircraft in the Air Force structure and to consult with the Chief of Staff, U.S. Army, prior to changing the force levels of, or replacing these aircraft.”⁴⁵ The agreement also insured the Army inclusion in any further consultations on the characteristics of future fixed-wing aircraft to meet the Army’s needs for logistical support.⁴⁶

⁴¹ Bowers, 237.

⁴² Harold K. Johnson and John P. McConnell, Agreement Between the Chief of Staff, U.S. Army, and Chief of Staff, U.S. Air Force, Washington D.C., 1966, 1

⁴³ Bowers, 238.

⁴⁴ Wolf et al., 379

⁴⁵ Johnson and McConnell, 1.

⁴⁶ Ibid.

Following the Vietnam War, the Air Force began the transfer of all of their C-123 Providers and C-7 Caribous to the Air National Guard and Air Force Reserve forces. Citing improved portable surface-to-air air defense weapons, the Air Force opted not to replace these airframes in the active force, believing that the use of fixed-wing transport forward of the Army Division bases was too dangerous. Reducing the financial requirement to keep this fleet operational in the active component also allowed the Air Force to return their focus to fighters and bombers.⁴⁷

In 1984, the Air Force again entered a small cargo plane into their inventory due to the European Distribution System Aircraft Study. This study, conducted to determine the most efficient way of supporting U.S. European based forces “for pickup and delivery of spare aircraft parts, and the stipulation that every base be transited twice each day.” The Air Force purchased 18 C-23A Sherpa airplanes for this requirement in Europe, using the new airframe from November 1984 through 1990 when the EDSA program ended.⁴⁸ In a reversal from the disposition of the Caribous from the Army to the Air Force in the 1960s, the Air Force transferred some of these airframes to the Army National Guard, who also purchased additional C-23Bs as well. The Army used these aircraft to support the maintenance mission as well, assigning them to an Aviation Classification and Repair Facility and other State Area Commands.

The most recent entry into the smaller airlift category occurred in 1990 when the Air Force purchased the Italian made Alenia G222 aircraft to conduct rapid response, intratheater airlift missions. Designated by the Air Force as the C-27A Spartan, the small

⁴⁷ Bowers, 651-2.

⁴⁸ Donald and Lake, 384.

fleet of 10 aircraft stationed at Howard Air Force Base in Panama supported the United States Southern Command. The Air Force selected this particular airframe in part because of its ability to land at most of the airfields in Central and South America where it performed counter-drug and peacekeeping missions.⁴⁹ These planes served the command for nine years until the Air Force retired them when the base closed following the transfer of control of the Panama Canal to Panama in 1999.⁵⁰ The ten aircraft flew to Tucson, Arizona and inducted into the 309th Aerospace Maintenance and Regeneration Group, also referred to as “The Boneyard.”⁵¹

The Army Future Cargo Aircraft Program

Operations in Afghanistan and Iraq exposed a capability gap in the Army’s aviation arm, specifically fixed-wing direct support aircraft. The Army was using its helicopters and C-23 Sherpa fixed-wing aircraft to provide a more responsive delivery of critical cargo. The Sherpa, entirely contained in the Army National Guard, is a capable aircraft but is relatively old and does not offer a great deal of cargo carrying capability. In support of the Army National Guards, the active Army became involved in what became the Future Cargo Aircraft (FCA). In addition to supporting operations in theater, the FCA would also provide the Army National Guard a modern airplane for use in its homeland defense mission, such as disaster relief, as well. The Army developed an

⁴⁹ Donald and Lake, 28.

⁵⁰ Douglas J. Gilbert, “A Goodbye Mission.” American Forces Press Service, July 29, 1999.

⁵¹ United States Air Force Material Command. “AMARC Experience.” 309th Aerospace Maintenance and Regeneration Group. http://amarcexperience.com/ui/index.php?option=com_content&view=article&id=2&Itemid=213 (accessed March 10, 2013).

initial requirement to address the gap and the Joint Staff began looking into how to address this requirement in 2004.⁵² The Army's Initial Capabilities Document, which identified a capability gap in the Army's organic airlift structure, was approved the Army Requirements Oversight Council on December 15, 2004.⁵³ In March 2005, the Joint Requirements Oversight Council (JROC) validated the Army's requirement allowing a purchase of 33 FCAs.

In an effort to arrive at a material solution faster, the Army, in April 2005, began canvassing the defense industry for a commercial off-the-shelf solution for the JCA. In addition to cost, performance, and maintenance information, the Army was also seeking to find an airframe that met Federal Aviation Administration certifications.⁵⁴ It looked like the Army was well on the way to refurbishing an old fleet and relieving some pressure on the cargo helicopter fleet.

The Air Force Light Cargo Aircraft Program

In February 2005, the United States Transportation Command, the functional combatant command that is responsible for all air, sea, and ground transportation within the Department of Defense, announced that it would be asking the Joint Staff to conduct a

⁵² Cynthia Di Pasquale, "Joint Staff Considers Air Force, Army Roles in Intratheater Airlift," *Insidedefense.com*, October 29, 2004, under "Inside the Air Force," <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-10/29/2004/joint-staff-considers-air-force-army-roles-in-intratheater-airlift/menu-id-151.html> (accessed February 9, 2013).

⁵³ Ashley Roque, "December AROC Review Anticipated For Future Fixed-Wing Aircraft," *Insidedefense.com*, November 29, 2004, under "Inside the Army," <http://insidedefense.com/Inside-the-Army/Inside-the-Army-11/29/2004/december-aroc-review-anticipated-for-future-fixed-wing-aircraft/menu-id-149.html> (accessed February 9, 2013).

⁵⁴ Ashley Roque, "Army Seeking Information for Off-the-Shelf Future Cargo Aircraft," *Insidedefense.com*, April 25, 2005, under "Inside the Army," <http://insidedefense.com/Inside-the-Army/Inside-the-Army-04/25/2005/army-seeking-information-for-off-the-shelf-future-cargo-aircraft/menu-id-149.html> (accessed February 9, 2013).

study of the tactical airlift needs of the future. This closely followed the Mobility Capabilities Study, with an expected release in March, and the 2005 Quadrennial Defense Review.⁵⁵

Shortly after the JROC approved the Army's Initial Capabilities Document in March, the Air Force began to express interest in the program. General John Jumper, Air Force Chief of Staff, said that he had entered into talks with the Army about the development of a new generation of tactical aircraft and envisioned a platform smaller than the C-130. Drawing a parallel to the Vietnam War, General Jumper drew a comparison to the Caribou for an aircraft that could, "operate from austere runways and reach troops scattered about in hostile areas, among a host of other tactical capabilities."⁵⁶ Perhaps in an effort to draw more attention within the Air Force to the issue, General Jumper went on say that perhaps the Air Force needs a smaller cargo airplane to, "deal with things of the type that I had to deal with as a second lieutenant in Vietnam. We landed into the small Special Forces camps scattered around Vietnam. And we need a platform similar to that now."⁵⁷

Two months later in May, the Air Force stated that they agreed with the Army's path towards purchasing fixed-wing aircraft. At the Army Aviation Association of America's annual conference that month, Army Acquisition Executive Claude Bolton, after explaining to the Air Force how the Army intended to use the new plane, told

⁵⁵ Di Pasquale, "Joint Staff Considers Air Force, Army Roles in Intratheater Airlift."

⁵⁶ Elizabeth Rees, "Jumper: USAF, Army Discussing Next Generation of Tactical Airlifters," *Insidedefense.com*, February 4, 2005, under "Inside the Air Force," <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-02/04/2005/jumper-usaf-army-discussing-next-generation-of-tactical-airlifters/menu-id-151.html> (accessed February 9, 2013).

⁵⁷ Ibid.

reporters that the Air Force response was, “No, that's not what we do. We are not organic to respond to commanders in the way the Army is looking to employ the FCA.”⁵⁸ Mr. Bolton went on to add that while the Air Force agreed with the approval for the Army purchase of 33 airframes, the end number would probably be much larger.

As we discuss the next buy, it will be going back and looking to see if the Air Force can step up to this. If the Air Force believes they can meet the mission and be totally responsible...then I'm sure our leadership will take that into consideration.⁵⁹

If it was something that was simmering behind the cool veil that shrouded the Air Force, those comments seemed to have started the slow simmer of the old service feud.

That September, six months after the March 2005 JROC approval of the Army ICD, the Air Force announced that it was looking to enter the small cargo aircraft field itself. Acknowledging that the Army was trying to be more efficient, General Jumper said, “The Army is doing a lot of sling loads underneath helicopters to go after their forward locations. And they're doing their sling loads over distances they really shouldn't be doing sling loads. We should be in there with C-130s or something smaller.”⁶⁰ At the end of the roundtable though, it appeared that the true Air Force thoughts emerged. When asked comments on the Army's FCA Program in September, General Jumper

⁵⁸ Ashley Roque, “Air Force agrees Army should proceed with Future Cargo Aircraft Buy,” *Insidedefense.com*, April 25, 2005, under “Inside the Army,” <http://insidedefense.com/Inside-the-Army/Inside-the-Army-05/16/2005/air-force-agrees-army-should-proceed-with-future-cargo-aircraft-buy/menu-id-149.html> (accessed February 9, 2013).

⁵⁹ Roque, “Air Force agrees Army should proceed with Future Cargo Aircraft Buy.”

⁶⁰ John T. Bennett, “USAF Chief: Small Fixed-Wing Aircraft Needed for Intra-Theater Lift,” *Insidedefense.com*, September 2, 2005, under “Inside the Air Force,” <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-09/02/2005/usaf-chief-small-fixed-wing-aircraft-needed-for-intra-theater-lift/menu-id-151.html> (accessed February 9, 2013).

stated, “My thought on that is, you don't need to go out and buy yourself an Air Force -- we've got one.”⁶¹

Later that month, the new Air Force Chief of Staff, General T. Michael Moseley, concurred with his predecessors. Still deeply involved in relief operations after Hurricane Katrina struck the City of New Orleans, Louisiana in August, General Moseley added that the relief efforts, in addition to combat operations, revealed the need for a “light cargo aircraft that we could have been using down on the Gulf Coast right now.”⁶² Speaking the following day at an Air Force Association event, he brought it to the audience’s attention that he felt there was an emerging requirement for a “small cargo aircraft that could “carry one or two” hefty pallets of military equipment or humanitarian aid supplies into a combat zone or areas devastated by natural disasters.”⁶³

Requirements of the services looked to be along the same lines, and in October General Moseley announced that the Air Force would, “incorporate technical insights from the Army's Future Cargo Aircraft effort as the service develops the conceptual “Light Cargo Aircraft”⁶⁴ Further, Major General Norman Seip, the Air Force Deputy Chief of Staff for Air and Space Operations, responded to questions posed by *Inside the Air Force* stating that the service would “build upon it to define a capability for light

⁶¹ Ibid.

⁶² John T. Bennett, “Air Force eyes new 'Light Cargo Aircraft' for Intratheater Lift,” *Insidedefense.com*, September 16, 2005, under “Inside the Air Force,” <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-09/16/2005/air-force-eyes-new-light-cargo-aircraft-for-intratheater-lift/menu-id-151.html> (accessed February 9, 2013).

⁶³ Bennett, “Air Force eyes new 'Light Cargo Aircraft' for Intratheater Lift.”

⁶⁴ John T. Bennett, “USAF will 'Build Upon' Army effort to develop its Light Cargo Aircraft,” *Insidedefense.com*, October 14, 2005, under “Inside the Air Force,” <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-10/14/2005/usaf-will-build-upon-army-effort-to-develop-its-light-cargo-aircraft/menu-id-151.html> (accessed February 9, 2013).

intratheater airlift for the joint force, a task which is broader in scope than the Army's organic lift capability."⁶⁵

The Joint Cargo Aircraft Program

As calendar year 2005 drew to a close, both the Army and the Air Force programs were moving along. The Army was postured to release its request for proposal for a commercial off-the-shelf solution to meet their FCA program requirement. The Air Force, new into the game and their LCA program still in the concept stage, was at least a year behind the Army. The Air Force Requirements Oversight Council approved the Air Force's initial capabilities document in November, paving the way for future program activities including looking more thoroughly at the requirements and conducting a capabilities assessment.⁶⁶

While each service was progressing with their programs, the Joint Staff and the Department of Defense appeared to be working behind the scenes on something else. Lieutenant General Claude Christianson, the Joint Staff J4, indicated to reporters during a late November conference that "there is an initiative to look at intratheater air capability and try and have a single program to address it, vice service programs to address specific requirements."⁶⁷ His comments were in line with separate comments made by the Army and the Air Force. Army Brigadier General Stephen D. Mundt, Director of the Aviation

⁶⁵ Ibid.

⁶⁶ John T. Bennett, "Air Force likely 'Several Years Away' from Issuing First LCA Solicitation," *Insidedefense.com*, December 9, 2005, under "Inside the Air Force," <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-12/09/2005/air-force-likely-several-years-away-from-issuing-first-lca-solicitation/menu-id-151.html> (accessed February 9, 2013).

⁶⁷ Ibid.

Directorate, Army G-3/5/7, indicated that the Army and the Air Force had been contemplating combining their efforts. An Air Force official commented that it was “too early to commit to merging the two programs since the [Air Force] will be looking at the broader intratheater lift mission -- though, as stated earlier, we do see commonalities that will not be ignored.”⁶⁸

Program Decision Memorandum III directed the Army to lead the Joint Cargo Aircraft program in December 2005, merging the Army’s Future Cargo Aircraft and the Air Force’s Light Cargo Aircraft.⁶⁹ The Vice Chiefs of Staff of both the Army and the Air Force signed a memorandum of agreement in June 2006 and four months later the establishment of the Joint Cargo Aircraft Joint Program Office put the program on track.

The JCA Program gained further support within DoD when the 2009 Quadrennial Roles and Missions Review Report was published. The report identified that the responsibilities of providing intratheater airlift has changed through the years and the lessons learned from operations in Iraq and Afghanistan “reshaped our intratheater airlift vision.”⁷⁰ Further, in the report the Department found that assigning the JCA to both the Army and the Air Force would provide the best value to the Joint Force as it would allow the aircraft to perform either the general support or direct support missions regardless of the service.⁷¹

⁶⁸ Ibid.

⁶⁹ Anthony W. Potts and Roderick A Bellows, "The Joint Cargo Aircraft (JCA)-Transfer of an Acquisition Category (ACAT) 1D Program to the U.S. Air Force (USAF)," *Army AT&L* (April-June 2010), 27.

⁷⁰ U.S. Department of Defense. *Quadrennial Roles and Missions Review Report*. (Washington DC: U.S. Government Printing Office, January 2004), 19.

⁷¹ Ibid., 22.

A short three months later in April 2009, Resource Management Decision 802 altered the program drastically. Through his decision, Secretary of Defense Robert Gates reduced the program from seventy-eight aircraft to thirty-eight and directed the Army to hand leadership and ownership of both the program and the mission to the Air Force. This seemed odd as this successful program remained on cost, schedule, and performance, even four years after the successful migration of both Services into a Joint Program.⁷²

In 2012 the program was suddenly halted. The Air Force announced that it would stop production of the C-27J and retire the new fleet of aircraft the Air National Guard had in its possession, upon their return from Afghanistan where these new aircraft were providing direct support to the Army. In contrast to General Jumpers' comments in 2005, his successor, General Norton A. Schwartz, in building the case for the FY 13 budget and an effort to save money said that C-27J did not provide any further capabilities than that provided by the C-130 already in service.⁷³

Homeland Defense (HA/DR) Hurricane Sandy Assistance and Relief

Recent validation of the C-27J's capability in a domestic missions during relief operations for Hurricane Sandy further demonstrated its capability and viability to the force. In late October 2012, Hurricane Sandy slammed the entire East Coast of the United States causing the most damage in New Jersey and New York. The accompanying storm surge quickly flooded streets, subway lines, and multiple tunnels

⁷² Potts and Bellows, 28.

⁷³ Amy McCullough, "Seeking a Total Force Balance," *Air Force Magazine*, (April 2012), 29.

throughout the city cutting electrical power to millions. Days later, Air National Guard C-27J crews from Maryland, Mississippi and Ohio flew missions delivering power generation equipment and tactical vehicles to New York. General Jumpers rationale for the small air lifter was coming true. The Air Force states that they chose the C-27J for this mission due to its, “access to a wide range of airfields, including short, unprepared strips while transporting heavy loads.”⁷⁴ The capabilities of the aircraft allow the C-27J access to airfields that are not accessible to larger airlifters such as the C-17 and C-130.

⁷⁴ Gareth Jennings, "USAF C-27J Makes Domestic Debut in Disaster Relief Operations," *Janes.ihs.com*, November 6, 2012, under "Jane's Defence Weekly," <https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?ShowProductLink=true&DocType=News&ItemId=+++1528969&Pubabbrev=JDW> (accessed February 9, 2013).

CHAPTER 6: CASE STUDY ANALYSIS

Reviewing the two case studies, both the TFX and the JCA programs failed for different reasons, but there are some similarities.

Secretary McNamara's decision to force the Navy and the Air Force to come to an agreement on requirements for the F-111 and force a joint program was doomed from the start. The premise of having two parties come to an agreement on requirements for their specific purpose is faulty. In the case of two military services, these are compounded with distinct service cultures. The Navy never bought into the program and were directed to forego their plans for the Missileer. Navy requirements were to take a back seat to Air Force requirements at the direction of McNamara.

The TFX failed to meet the requirements of either the Air Force or the Navy. The Air Force was seeking a multi-role plane that could conduct operations across the spectrum of the air domain, to include trans-Atlantic flight and aerial delivery of weapons. The Navy needed a single purpose plane for fleet defense by using an advanced radar and long-range missiles. The Navy did not need this plane to be supersonic, but the Air Force required supersonic capability. Tradeoffs to arrive at common requirements for the Navy and the Air Force created an aircraft that satisfied neither service. In negotiating the requirements the Navy ceded much more than the Air Force, so much so that they were able to convince Congress to stop funding for the Navy variant, F-111B, a year after it began, effectively ending the joint program.

The case of the JCA follows a slightly different path, but tells a similar story. The Army identified a requirement for a capability to deliver personnel and equipment at the needs of the commander on the ground, which they labeled as time-sensitive/mission-

critical. Army programmers developed the concept, sought a commercial off-the-shelf solution to meet the demands of the wars in Afghanistan and Iraq, and received approval from the JROC to proceed. After hearing of the Army's proposal, the Air Force developed a similar requirement and program. The Army was well on the way with the JCA when Secretary of Defense Gates directed that the two services joint the programs and reach an agreement on a joint program.

The Joint Cargo Aircraft Program started on great footing when compared to the TFX. Unlike the TFX, the merging of the requirements went very well between the Army and the Air Force and within six months the Service Vice Chiefs signed an agreement on requirements and to jointly develop operational and acquisition strategies for the JCA. The establishment of the Joint Program Office less than a year after the Department of Defense directed the merge was nearly flawless. Within 18 months, a the Joint Program Office awarded a contract to deliver 78 airplanes and the JCA Program was performing on all levels, meeting cost, performance, and schedule.

Only the involvement of the Secretary of Defense changed the programs for good. By removing the Army from the program, Secretary Gates set the stage for the Air Force to be able to unilaterally make critical program decisions, ultimately cancelling the program. Instead of allowing the Services to work through their different perspectives on how to provide support for the joint force, Secretary of Defense Gates essentially allowed the program to be terminated.

Joint acquisition programs for major weapon systems do not work. In the case of the TFX, each service had different requirements and the Defense Department would have been better served to allow each service to derive their own capability. In the JCA

case, the joint program was going smoothly until one of the services was forced out, ending a very promising joint program. Requirements seem to be expansive as each service drives their own requirements and are less inclined to compromise. As the TFX case study demonstrated expense of the requirements was so large that the it made the program exceptionally complex and in the end unaffordable. It proved difficult enough for the Navy and Air Force to attain their single service requirements, let alone the joint services.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

With forecasts of decreasing defense budgets, it is imperative for the Joint Force to maximize the effectiveness of its budget and to procure the equipment to meet the requirements placed upon the force. While there are many areas where a common solution may be had among the services, all too often executives make the case for joint programs to meet disparate requirements, and each side is forced to cede capability that is critical to its operations.

Each of the services has the Title 10 responsibility to man, train, and equip their force as part of the Joint Force. Mandating joint programs just to make them joint has proven to be a faulty premise. Regardless of the often viewed potential economies of scale that decision makers see in cost savings, the joint acquisition of major platforms have not produced the efficiencies nor, and more importantly, the capabilities they promise.

Jointness cannot be mandated or directed; doing so turns at least one of the parties off, especially if the solution joint program is closer to the other participant. Even if you come to terms with the requirements, the lifespan of the program often involves the changing of the program manager that normally is from one of the services vested in the program. Regardless of how much one says he or she can remove themselves from their own service biases, it is highly predictable that they would cede to their parent service. There are a couple of other options though.

Individual service biases are difficult to overcome. One option to overcome these biases is to eliminate the services altogether and create one service force. A less draconian method would be to have an outside service manager in charge with the

validation of the joint requirements, allocation of resources from the services involved in the program, and management of the program towards a material solution. Otherwise, you risk a single service becoming more interested in addressing their stovepipe issues and addressing programmatic issues from their service perspective.

The best option though is one that is discussed in a few cases throughout this paper, to have a single service lead joint interest programs. One service runs the program under their specific service requirements. Other services procure the item from the procuring service. The example discussed early in this paper is the Army's UH-60 Black Hawk helicopter program. The Army designed and built the Black Hawk to their specific requirements to replace the aging Huey and now the other services all procure through the Army's Utility Program Management Office. Each of the services fund their unique modifications, to meet their requirement, on post-production aircraft.

We are different services for a reason and have different requirements. There are certain areas where requirements are close enough that two or more services can merge the requirements while keeping the core capabilities required for their service needs. It is when OSD or the Joint Staff attempts to combine service programs without taking consideration each of the service requirements into a singular material solution that these programs marginalize requirements of each party to a point where the program is not meeting their individual requirements.

The JROC's mission as listed in Title 10, U.S. Code is to assist the Chairman of the Joint Chiefs of Staff:

(A) in identifying, assessing, and approving joint military requirements (including existing systems and equipment) to meet the national military strategy;

(B) in identifying the core mission area associated with each such requirement; and

(C) in ensuring that appropriate trade-offs are made among life-cycle cost, schedule, and performance objectives, and procurement quantity objectives, in the establishment and approval of military requirements...¹

Nowhere in the law does it provide authority to direct joint programs. The Services identify requirements so they can fulfill their Title 10 authorities to man, train, and equip their force. When the Department of Defense, whether it is the JROC or the Secretary of Defense, dictates joint acquisition programs it slows the process down and delays putting capabilities into the hands of the warfighter. It seems that joint programs are forced to give the appearance of efficiencies to those across the Potomac on Capitol Hill, rather than make a real effort to achieve something for the Joint Force.

¹ Joint Requirements Oversight Council, codified at U.S. Code 10 (2012), § 181.

BIBLIOGRAPHY

- Adelman, Kenneth L. and Norman R. Augustine. *The Defense Revolution: Strategy for the Brave New World*. San Francisco: ICS Press, Institute for Contemporary Studies, 1990.
- Angelucci, Enzo and Peter M. Bowers. *The American Fighter*. New York: Orion, 1987.
- Army Technology. "UH-60 / S-70A Black Hawk Multi-Mission Helicopter, United States of America." Net Resources International. http://www.army-technology.com/projects/black_hawk/ (accessed March 27, 2013).
- Art, Robert J. *The TFX Decision; McNamara and the Military*. Boston: Little, Brown & Company, 1968.
- Bennett, John T. "Air Force eyes new 'Light Cargo Aircraft' for Intratheater Lift." *Insidedefense.com*, September 16, 2005. <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-09/16/2005/air-force-eyes-new-light-cargo-aircraft-for-intratheater-lift/menu-id-151.html> (accessed February 9, 2013).
- . "Air Force likely 'Several Years Away' from Issuing First LCA Solicitation." *Insidedefense.com*, December 9, 2005. <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-12/09/2005/air-force-likely-several-years-away-from-issuing-first-lca-solicitation/menu-id-151.html> (accessed February 9, 2013).
- . "USAF Chief: Small Fixed-Wing Aircraft Needed for Intra-Theater Lift." *Insidedefense.com*, September 2, 2005. <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-09/02/2005/usaf-chief-small-fixed-wing-aircraft-needed-for-intra-theater-lift/menu-id-151.html> (accessed February 9, 2013).
- . "USAF will 'Build Upon' Army effort to develop its Light Cargo Aircraft." *Insidedefense.com*, October 14, 2005. <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-10/14/2005/usaf-will-build-upon-army-effort-to-develop-its-light-cargo-aircraft/menu-id-151.html> (accessed February 9, 2013).
- Bowers, Ray L. and Office of Air Force History. *The United States Air Force in Southeast Asia: Tactical Airlift*. Fort Belvoir, Virginia: Defense Technical Information Center, 1983.
- Bugos, Glenn E. "Manufacturing Certainty: Testing and Program Management for the F-4 Phantom II." *Social Studies of Science* 23, No. 2 (May, 1993): 265-300.
- Bull, Stephen. "Encyclopedia of Military Technology and Innovation." Westport, CT: Greenwood Press, 2004.

- Busar, Wayne. "DHC-5/C-8 Buffalo." The deHavilland Caribou (DHC-4) and Buffalo (DHC-5) Website. <http://www.dhc4and5.org/Buffalo.html> (accessed March 9, 2013).
- Cameron, Robert S. "American Tank Development during the Cold War." *Armor* 107, no. 4 (1998): 30-36.
- . "Pushing the Envelope of Battlefield Superiority: American Tank Development from the 1970s to the Present." *Armor* 107, No. 6 (1998): 8-14.
- Cheng, Christopher C. S. *Air Mobility: The Development of a Doctrine*. Westport, CT: Praeger Publishers, 1994.
- Congressional Research Service. *Executive Branch Reorganization: An Overview. A Study Prepared for the Committee on Governmental Affairs, United States Senate, by the Congressional Research Service. March 1978*. Committee Print. Washington D.C., U.S. Government Printing Office, 1978.
- Cooksley, Peter G., and Bruce Robertson. *Air Warfare*. London: Arms & Armour Press, 1997.
- Coulam, Robert F. *Illusions of Choice: The F-111 and the Problem of Weapons Acquisition Reform*. Princeton, NJ: Princeton University Press, 1977.
- Crow, Duncan, and Robert Joseph Icks. *Encyclopedia of Tanks*. London, England: Barrie & Jenkins, 1975.
- Di Pasquale, Cynthia. "Joint Staff Considers Air Force, Army Roles in Intratheater Airlift." *Insidedefense.com*, October 29, 2004. <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-02/18/2005/transcom-to-soon-request-joint-staff-intratheater-airlift-study/menu-id-151.html> (accessed February 9, 2013).
- Donald, David, and Jon Lake. *Encyclopedia of World Military Aircraft*. 2 vols. London, UK: Aerospace Publ., 1994.
- Finletter, Thomas K. and Frank Pace, Jr. *Memorandum of Understanding Relating to Army Organic Aviation*. Washington, D.C.: United States Army, United States Air Force, October 2, 1951.
- Finletter, Thomas K. and Frank Pace, Jr. *Memorandum of Understanding Relating to Army Organic Aviation*. Washington, D.C.: United States Army, United States Air Force, November 4, 1952.
- Forrestal, James. *Functions of the Armed Forces and the Joint Chiefs of Staff*. Washington, D.C.: Office of the Secretary of Defense, April 21, 1948.

- Foss, Christopher F. *Jane's Armour and Artillery*. London, UK: Jane's, 1994.
- Fredriksen, John C. *Warbirds: An Illustrated Guide to U.S. Military Aircraft, 1915-2000*. Santa Barbara, CA: ABC-CLIO, 1999.
- Gelbart, Marsh. *Tanks: Main Battle Tanks and Light Tanks*. London, UK: Brassey's, 1996.
- Gilbert, Douglas J. "A Goodbye Mission." *American Forces Press Service*, July 29, 1999.
- GlobalSecurity.org. "UTTAS (Utility Tactical Transport Aircraft System)." GlobalSecurity.org.
<http://www.globalsecurity.org/military/systems/aircraft/uttas.htm> (accessed 15 February, 2013).
- Hallion, Richard P. "Doctrine, Technology, and Air Warfare: A Late Twentieth - Century Perspective." *Airpower Journal* 1, No. 2, (1987): 16-27.
- Head, Richard G. "The Sociology of Military Decision-Making: The A-7 Aircraft." *The Pacific Sociological Review* 16, No. 2, Military Sociology (April, 1973): 209-27.
- Helicopter History Site. "UTTAS – "Sikorsky UH-60 Blackhawk." Helicopter History Site. <http://www.helis.com/programs/uttas.php> (accessed 15 February 2013).
- Hoffman, Jon T. *USMC: A Complete History*. Quantico, VA: Marine Corps Association, 2002.
- Jane's Defense. "General Dynamics Land Systems M1/M1A1/M1A2 Abrams MBT." IHS Jane's Defense & Security Intelligence & Analysis.
https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=Reference&ItemId=+++1327751&Pubabbrev=JAA_ (accessed March 27, 2013).
- . "Sikorsky S-70A." IHS Jane's All the World's Aircraft."
<https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=Reference&ItemId=+++1343474> (accessed March 27, 2013).
- Jennings, Gareth. "USAF C-27J Makes Domestic Debut in Disaster Relief Operations." *Janes.ihs.com*, 6 November 2012.
<https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?ShowProductLink=true&DocType=News&ItemId=+++1528969&Pubabbrev=JDW> (accessed February 9, 2013).

- Johnson, Harold K. and John P. McConnell. *Agreement Between the Chief of Staff, U.S. Army, and Chief of Staff, U.S. Air Force*, Washington, D.C.: United States Army, United States Air Force, April 6, 1966.
- Kaplan, Lawrence S., Ronald D. Landa and Edward J. Drea. *History of the Office of the Secretary of Defense. Volume V, The McNamara Ascendancy, 1961-1965*. History of the Office of the Secretary of Defense. Washington: Office of the Secretary of Defense, Historical office, 1997.
- Kelly, Orr. *King of the Killing Zone*. New York: W.W. Norton, 1989.
- Knaack, Marcelle Size. *Post-World War II Fighters, 1945-1973*. Washington, D.C.: Office of Air Force History, U.S. Air Force, 1986.
- Leoni, Ray D. *Black Hawk: The Story of a World Class Helicopter*. Reston, VA: American Institute of Aeronautics and Astronautics, 2007.
- Locher, James R. *Victory on the Potomac: The Goldwater-Nichols Act Unifies the Pentagon*. College Station: Texas A&M University Press, 2002.
- MacNeil, Neil, and Harold W. Metz. *The Hoover Report, 1953-1955, What It Means to You As Citizen and Taxpayer*. New York: Macmillan, 1956.
- McCullough, Amy. "Seeking a Total Force Balance." *Air Force Magazine*, (April 2012): 28-32.
- McLain, D. R., and M. L. Durchholz. U.S.A.F. EDSA (European Distribution System Aircraft) Routing and Operating Location Selection Study. Ft. Belvoir, VA: Defense Technical Information Center, 1983.
- Owens, William A. and James R. Blaker. "Overseeing Cross-Service Trade Offs," *Joint Forces Quarterly*, (Autumn 1996, No. 13): 37-40.
- O'Rourke, G. G. *Famous Aircraft: the F-4 Phantom II*. New York: Arco Publishing Co., Inc., 1969.
- Packard Commission. *A Quest for Excellence*, Final Report to the President, Blue Ribbon Commission on Defense Management. Washington, D. C.: The White House, June 1986.
- Potts, Anthony W. and Roderick A Bellows. "The Joint Cargo Aircraft (JCA)-Transfer of an Acquisition Category (ACAT) 1D Program to the U.S. Air Force (USAF)." *Army AT&L* (Apr-Jun 2010): 26-29.

- Quick, John. *Dictionary of Weapons and Military Terms*. New York: McGraw-Hill, 1973.
- Rearden, Steven L. and United States. Department of Defense Historical Office. *The Formative Years, 1947-1950*. Washington, D.C.: Historical Office, Office of the Secretary of Defense, 1984.
- Rees, Elizabeth. "Jumper: USAF, Army Discussing Next Generation of Tactical Airlifters." *Insidedefense.com*, February 4, 2005. <http://insidedefense.com/Inside-the-Air-Force/Inside-the-Air-Force-02/04/2005/jumper-usaf-army-discussing-next-generation-of-tactical-airlifters/menu-id-151.html> (accessed February 9, 2013).
- Roherty, James Michael. *Decisions of Robert S. McNamara; A Study of the Role of the Secretary of Defense*. Coral Gables, FL: University of Miami Press, 1970.
- Roque, Ashley. "Air Force agrees Army should proceed with Future Cargo Aircraft Buy." *Insidedefense.com*, April 25, 2005. <http://insidedefense.com/Inside-the-Army/Inside-the-Army-05/16/2005/air-force-agrees-army-should-proceed-with-future-cargo-aircraft-buy/menu-id-149.html> (accessed February 9, 2013).
- . "Army Seeking Information for Off-the-Shelf Future Cargo Aircraft." *Insidedefense.com*, April 25, 2005. <http://insidedefense.com/Inside-the-Army/Inside-the-Army-04/25/2005/army-seeking-information-for-off-the-shelf-future-cargo-aircraft/menu-id-149.html> (accessed February 9, 2013).
- . "December AROC Review Anticipated For Future Fixed-Wing Aircraft." *Insidedefense.com*, November 29, 2004. <http://insidedefense.com/Inside-the-Army/Inside-the-Army-11/29/2004/december-aroc-review-anticipated-for-future-fixed-wing-aircraft/menu-id-149.html>
- Scutts, Jerry. *F-105 Thunderchief*. New York: Scribner, 1981.
- Shapley, Deborah. *Promise and Power: The Life and Times of Robert McNamara*. Boston: Little, Brown & Company, 1993.
- Swanborough, Gordon and Peter M. Bowers. *United States Navy Aircraft Since 1911*. London, UK: Putnam, 1976.
- Taylor, Michael J. H. *Jane's World Combat Aircraft*. Surrey, UK: Jane's Information Group, 1988.
- The National Security Act of 1947*. Washington, D.C.: US Government Printing Office, July 1947.

- Thomas, Evan, Barrett Seaman and Bruce Van Voorst. "Defensive About Defense." *Time* (March 10, 1986): 43.
- Trewhitt, Henry L. *Mcnamara*. New York: Harper & Row, 1971.
- United States Commission on Organization of the Executive Branch of the Government (1947-1949) and Herbert Hoover. *The Hoover Commission Report on Organization of the Executive Branch of the Government*. New York: McGraw-Hill, 1949.
- United States Committee on Department of Defense Organization. *Report of the Rockefeller Committee on Department of Defense Organization*. Washington, D.C.: United States Government Printing Office, 1953.
- U.S. Air Force Material Command. "AMARC Experience." 309th Aerospace Maintenance and Regeneration Group.
http://amarcexperience.com/ui/index.php?option=com_content&view=article&id=2&Itemid=213 (accessed March 10, 2013).
- U.S. Air Force Tactical Air Command. *Organization and Functions, Headquarters Tactical Air Command*. Langley Air Force Base, VA: Department of the Air Force, Headquarters, Tactical Air Command, 1978.
- U.S. Congress. Senate. Committee on Committee on Government Operations, Permanent Subcommittee on Investigations. *The F-111 Aircraft Program*. 92d Cong., 1st sess., 1971, S. Hrg. 1504, (Statement of Mr. Elmer Staats, Comptroller General of the United States General Accounting Office).
- U.S. Department of Defense. *CJCSI 5123.01E: Joint Requirements Oversight Council Charter*. Washington, D.C.: Department of Defense, 17 April 2010.
- . *CJCSI 5123.01F: Joint Requirements Oversight Council Charter*. Washington, D.C.: U.S. Government Printing Office, 10 January 2012.
- . *Quadrennial Roles and Missions Review Report*. Washington DC: U.S. U.S. Government Printing Office, January 2004.
- U.S. President. Executive Order 9877. "Functions of the Armed Forces." July 26, 1947.
- Weinert, Richard P. and Susan Canedy. *A History of Army Aviation, 1950-1962*. Fort Monroe, VA: Office of the Command Historian, U.S. Army Training and Doctrine Command, 1991.
- Wolf, Richard Irving and the United States Air Force. *The United States Air Force: Basic Documents on Roles and Missions*. Washington, D.C.: Office of Air Force History, United States Air Force, 1988.

VITA

Lieutenant Colonel Hopkins is a 1991 graduate of Westminster College with a Bachelor of Arts Degree in Business Administration and a commission into the Aviation Branch of the United States Army.

He is a graduate from the Aviation Officers Basic and Advanced Courses and the United States Army Command and General Staff College. He has served in all leadership positions from Platoon Leader to Battalion Commander in Army Aviation and is a rated pilot in the UH-1H Huey and UH-60A & L Blackhawk Helicopters. Lieutenant Colonel Hopkins' deployments include a tour in Bosnia-Herzegovina in support of Operation Joint Forge, two tours to Afghanistan in support of Operation Enduring Freedom and one tour in Iraq in support of Operation Iraqi Freedom. His most recent assignment was as an Army Congressional Liaison to the Armed Services Committees.

He is currently a student at the Joint Advanced Warfighting School (JAWS) at the Joint Forces Staff College in Norfolk, Virginia. Lieutenant Colonel Hopkins is married. He and his wife have one son.